
MEMORANDUM

SUBJECT: VPDES Permit No. VA0086789, Oakland Park Wastewater Treatment Plant; VPDES Modification; King George County

TO: VPDES Permit No. VA0086789 Permit File

FROM: Joan C. Crowther

DATE: December 16, 2010

By their September 7, 2010 letter, King George County Service Authority (KGCSA) requested a major permit modification for their Oakland Park Wastewater Treatment Plant's VPDES Permit No. VA0086789. This memorandum appends the 2006 Fact Sheet (Attachment 4) supporting the VPDES permit effective June 15, 2006, and the July 9, 2008, minor modification (Attachment 3). The information contained in this memo replaces the information in the original 2006 fact sheet. KGCSA requested the removal of the annual average concentration effluent limitations for Total Nitrogen and Total Phosphorus that would have become effective January 1, 2011, and the Schedule of Compliance for meeting those January 1, 2011, effluent limitations.

The Oakland Park WWTP has not expanded its design flow since the enactment of the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia (9 VAC 25-820-10 *et seq.*) effective November 1, 2006. Current agency guidance would not have required the average annual nutrient concentration effluent limits included in the permit. Rather, at the time of a facility upgrade or expansion, the permit would be modified to reflect the nutrient removal technology installed. Since the facility has not undergone an upgrade or expansion, the annual average concentration limits are not needed. They were included in the permit prior to current agency guidance. The permit is being modified to reflect current agency guidance as the final effluent limits have not yet become effective.

The nutrient loadings are governed under Watershed General VPDES Permit for Nutrient Discharges to the Chesapeake Bay (Nutrient GP). KGCSA has elected to aggregate the mass loading for their Rappahannock Basin discharges, namely; Oakland Park Wastewater Treatment Plant (VPDES Permit No. VA0086789) and the Hopyard Wastewater Treatment Plant (VPDES Permit No. VA0089338) in accordance with 9 VAC 25-820-70, Part 1.B.2. Therefore, compliance with annual nutrient loadings for the Chesapeake Bay program is determined on an aggregated basis rather than by comparison of individual facility loads with respective individual WLAs. Additionally, KGCSA may comply with the mass loading requirements of the regulation by purchasing compliance credits through the Nutrient Credit Exchange.

This permit modification implements the following changes to the VPDES permit:

1. Removes the annual average concentration effluent limitations for Total Nitrogen (TN) and Total Phosphorus (TP) that would have become effective January 1, 2011. This is accomplished by removing the Part I.B effluent limits page (Page 2 of 7) from the permit.
2. Removes the Schedule of Compliance for meeting the TN and TP effluent limitations. This is accomplished by removing Part I.C. Schedule of Compliance from the permit.
3. Revises the numbering sequence of the permit special conditions after removing the conditions noted above from the permit.
4. Corrected typographical errors (namely, changed N/A to NA in Part I.A.1 of the permit; changed "Calculated" to "8 H-C" for the Total Phosphorus – Monthly Sample Type; and inserted the "<" for the 2/M explanation prior to "7 days apart") and updated the wording for Nutrient Reporting Calculations special condition (Part I.C.9).

The 2006 Fact Sheet information is amended as follows:

1. Section 17(e) - Effluent Maximum Annual Loading Limitations and Monitoring, Outfall 001 – Nutrients – This portion of the Fact Sheet is removed.
2. Section 19. Removal of the Effluent Limitations/Monitoring Requirements Table for the period beginning January 1, 2011.
3. Section 20 (b) – Removal of Part I.C. of the permit detailing the requirements for a Schedule of Compliance.
4. Section 23 – Changes to the Permit from the Previously Issued Permit – See previous paragraph.
5. Section 25 – Public Notice Information:

First Public Notice Date: 11/11/10

Second Public Notice Date: 11/18/10

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge,

VA 22193, Telephone No. (703) 583-3925, joan.crowther@deq.virginia.gov. See Attachment 1 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

6. Section 27 - Additional Comments:

Previous Board Action(s): The KGCSA is currently negotiating a Consent Special Order with DEQ for other Oakland Park WWTP's compliance issues

Staff Comments: None

Public Comment: No public comments were received during the comment period.

EPA Checklist: The checklist can be found in Attachment 2.

7. List of Attachments:

Attachment 1 – Permit Modification Public Notice

Attachment 2 – EPA Checklist

Attachment 3 – July 9, 2008 Minor Modification Memo

Attachment 4 – 2006 Permit Fact Sheet

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a modification of a permit from the Department of Environmental Quality that allows the release of treated wastewater into a water body in King George County, Virginia.

PUBLIC COMMENT PERIOD: XXX, 2010 to 5:00 p.m. on XXX, 2010

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: King George County Service Authority, 10459 Courthouse Drive, Suite 201, King George, VA 22485, VA0086789

NAME AND ADDRESS OF FACILITY: Oakland Park Wastewater Treatment Plant, 1015 French Court, Oakland Park Subdivision, King George, VA 22485

PROJECT DESCRIPTION: King George County Service Authority has applied for a modified permit for the public Oakland Park Wastewater Treatment Plant. The applicant releases treated sewage wastewaters from residential areas at a rate of 0.14 million gallons per day into Muddy Creek in King George County in the Rappahannock River watershed. The existing permit limits the following pollutants: pH, cBOD₅, Total Suspended Solids, Total Kjeldahl Nitrogen, Dissolved Oxygen, Chlorine, Total Phosphorus, and Total Recoverable Copper. The sludge is disposed by hauling it to the Dahlgren Wastewater Treatment Plant. The modification of the permit would remove the Total Nitrogen and Total Phosphorus annual average concentration effluent limitations that would have become effective on January 1, 2011; the Schedule of Compliance for meeting those January 1, 2011 effluent limitations; correct some topographical errors; and update the wording for Nutrient Reporting Calculations

This facility is subject to the requirements of 9 VAC 25-820 and has registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requestor, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the documents at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.

Name: Joan C. Crowther

Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193

Phone: (703) 583-3925 E-mail: joan.crowther@deq.virginia.gov Fax: (703) 583-3821

Attachment 1

**State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review**

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name:	Oakland Park Wastewater Treatment Plant
NPDES Permit Number:	VA0086789
Permit Writer Name:	Joan C. Crowther
Date:	September 28, 2010

Major ☐Minor ☒Industrial ☐Municipal ☐**I.A. Draft Permit Package Submittal Includes:**

	Yes	No	N/A
1. Permit Application? VPDES PERMIT MODIFICATION		X	
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?	X		
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?		X	
8. Whole Effluent Toxicity Test summary and analysis?		X	
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics

	Yes	No	N/A
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet or permit contain a description of the wastewater treatment process?	X		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit? VPDES PERMIT MODIFICATION			X
5. Has there been any change in streamflow characteristics since the last permit was developed?		X	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet or permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?	X		
a. Has a TMDL been developed and approved by EPA for the impaired water?	X		
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?			X
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?	X		
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?	X		
10. Does the permit authorize discharges of storm water?		X	

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?			X
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs (To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether “antibacksliding” provisions were met for any limits that are less stringent than those in the previous NPDES permit?	X		

II.C. Technology-Based Effluent Limits (POTWs)	Yes	No	N/A
1. Does the permit contain numeric limits for <u>ALL</u> of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			X
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?		X	
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a “reasonable potential” evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the “reasonable potential” evaluation was performed in accordance with the State’s approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have “reasonable potential”?	X		
d. Does the fact sheet indicate that the “reasonable potential” and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?	X		
e. Does the permit contain numeric effluent limits for all pollutants for which “reasonable potential” was determined?	X		

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the record indicate that an “antidegradation” review was performed in accordance with the State’s approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?		X	
4. Does the permit require testing for Whole Effluent Toxicity?		X	

II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?	X		
2. Does the permit include appropriate storm water program requirements?		X	

II.F. Special Conditions – cont.	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?			X
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		X	
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?		X	
a. Does the permit require implementation of the “Nine Minimum Controls”?			X
b. Does the permit require development and implementation of a “Long Term Control Plan”?			X
c. Does the permit require monitoring and reporting for CSO events?			X
7. Does the permit include appropriate Pretreatment Program requirements?			X

II.G. Standard Conditions			Yes	No	N/A
1. Does the permit contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?			X		
List of Standard Conditions – 40 CFR 122.41					
Duty to comply	Property rights	Reporting Requirements			
Duty to reapply	Duty to provide information	Planned change			
Need to halt or reduce activity	Inspections and entry	Anticipated noncompliance			
not a defense	Monitoring and records	Transfers			
Duty to mitigate	Signatory requirement	Monitoring reports			
Proper O & M	Bypass	Compliance schedules			
Permit actions	Upset	24-Hour reporting			
		Other non-compliance			
2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?			X		

Part III. Signature Page

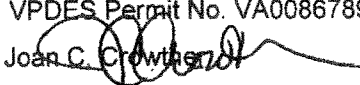
Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	<u>Joan C. Crowther</u>
Title	<u>VPDES Permit Writer</u>
Signature	<u></u>
Date	<u>September 28, 2010</u>

MEMORANDUM

SUBJECT: VPDES Permit No. VA0086789, Oakland Park Wastewater Treatment Plant; VPDES Minor Modification; King George County

TO: VPDES Permit No. VA0086789 Permit File

FROM: Joan C. Crowther 

DATE: July 9, 2008

As a result of the pending enforcement action and subsequent permit file review, staff thought it was appropriate to proceed with a staff-initiated VPDES minor modification of the Oakland Park permit to correct the following items:

1. Remove the 0.06 MGD effluent flow tier from the permit since the wastewater treatment plant has received the CTO to operate the 0.14 MGD facility. This CTO was issued December 29, 2006.
2. Increase the TKN frequency of monitoring from 2/M to 3D/W to be consistent with the cBOD₅ and TSS monitoring frequency. The TKN effluent limitation was included in the permit to ensure compliance with the DO model and not for nutrient removal (9 VAC 25-820).
3. Increase the sample type for NO₂ + NO₃, orthophosphate, and Total Phosphorus from Grab to 8 HC as specified in GM07-2008.
4. Corrected the No. 4 footnote reference on both the permit effluent pages to refer to the appropriate permit special condition (Part I, D. 10 to Part I, D. 9) for nutrient reporting calculations.
5. Replaced "Northern Virginia Regional Office" with "Northern Regional Office".
6. Because the wastewater treatment plant consists of two distinct chlorine contact tanks, each chlorine contact tank has to be measured 3 times a day at 4 hour intervals to ensure adequate disinfection. Guidance allows 9 exceptions to the minimum 1 mg/L requirement per tank. Therefore, the number of exceptions on the Discharge Monitoring Report has been increased from 9 to 18 to take into account the two chlorine contact tanks.
7. In accordance with the Sewage Regulations, the required Class operator for this facility was increased from Class III to Class II.

Since these revisions consisted of either typographic corrections or an increase in frequency monitoring, a minor modification of this permit was appropriate.

This document gives pertinent information concerning the VPDES Permit listed below. This permit is being processed as a Minor, Municipal permit. The permit is being modified to incorporate an expansion with an upper flow tier of 0.14 MGD. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et seq.

1. Facility Name and Address: Oakland Park WWTP
10459 Courthouse Drive, Suite 201
King George, VA 22485
SIC Code : 4952
Facility Location: 1015 French Court
Oakland Park Subdivision
Off State Route 218
County: King George
2. Permit No.: VA0086789
Expiration Date: 04/21/07
3. Owner Name: King George County Service Authority
Contact/Title: Mr. Christopher Thomas, General Manager
Telephone Number: (540) 775-2746
4. Application Complete Date: 06/25/05
Permit Drafted By: Jim Olson
Date Drafted: 01/12/06
Draft Permit Reviewed By: Tom Faha
Date Reviewed: 01/17/06
Public Comment Period : Start Date: May 3rd, 2006
End Date: June 5th, 2006
5. Receiving Waters Information: See **Attachment 1** for the Flow Frequency Determination
Receiving Stream Name : Muddy Creek, UT
River Mile: 0.45
Stream Basin: Rappahannock River
Subbasin: None
Section: 4
Stream Class: III
Special Standards: NONE (See Comments in Section 15.C.)
Waterbody ID: VAN-E21
7Q10 Low Flow: 0.0 MGD
7Q10 High Flow: 0.0 MGD
1Q10 Low Flow: 0.0 MGD
1Q10 High Flow: 0.0 MGD
Harmonic Mean Flow: 0.00 MGD
30Q5 Flow: 0.0 MGD
303(d) Listed: Yes
30Q10 Flow: 0.0 MGD
TMDL Approved: N/A
Date TMDL Approved: N/A
6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

<input checked="" type="checkbox"/> State Water Control Law	<input type="checkbox"/> EPA Guidelines
<input checked="" type="checkbox"/> Clean Water Act	<input checked="" type="checkbox"/> Water Quality Standards
<input checked="" type="checkbox"/> VPDES Permit Regulation	<input type="checkbox"/> Other (<i>PES, Occoquan Policy, Dulles</i>)
<input checked="" type="checkbox"/> EPA NPDES Regulation	
7. Licensed Operator Requirements: Class III
8. Reliability Class: Class I
9. Permit Characterization:

<input type="checkbox"/> Private	<input type="checkbox"/> Effluent Limited	<input type="checkbox"/> Possible Interstate Effect
<input type="checkbox"/> Federal	<input checked="" type="checkbox"/> Water Quality Limited	<input checked="" type="checkbox"/> Compliance Schedule Required
<input type="checkbox"/> State	<input type="checkbox"/> Toxics Monitoring Program Required	<input checked="" type="checkbox"/> Interim Limits in Permit
<input checked="" type="checkbox"/> POTW	<input type="checkbox"/> Pretreatment Program Required	<input type="checkbox"/> Interim Limits in Other Document
<input type="checkbox"/> TMDL		

Attachment 4

10. Wastewater Sources and Treatment Description:

Sewage from the subdivision's collection system gravity flows to a central pumping station located near the entrance of the STP. The station is a "Purestream" package unit with two centrifugal pumps. Flow is then pumped to the plant and enters through a comminutor prior to the aerated flow equalization basins. Float actuated submersible pumps pump the sewage to the secondary aeration basins which have diffused aeration and are operated in the extended aeration mode. Effluent from the aeration basins is sent to two secondary clarifiers. Sludge is recirculated to the aeration basins using air-lift return sludge pumps. The air is supplied by two rotary blowers which are alternated in operation. The secondary effluent can be chlorinated (Sanuril tablet feed system) prior to the tertiary filters to prevent algae growth. The tertiary filters have multi-media (anthracite coal and sand) beds. Backwash flow from the filters is recycled to the head of the plant. Disinfection and dechlorination of the effluent is accomplished using "Sanuril" tablet feed units located prior to the post aeration basin. The flow is then discharged to the outfall at the UT of Muddy Creek, which is approximately 300 feet below the plant.

The facility is currently rated at 0.14 MGD. It was recently expanded in full accordance with the Sewage Collection and Treatment Regulations (SCAT) 9VAC25-790. A CTO however is pending upon modification/reissuance of this permit. Ordinarily the permit for a facility expansion is modified first to authorize the expansion and then the expansion occurs. This did not happen in this case.

See **Attachment 2** for a facility schematic/diagram.

TABLE 1 – Outfall Description

Outfall Number	Discharge Sources	Treatment	Design Flow/Max 30-day Flow	Outfall Latitude and Longitude
001	Domestic and/or Commercial Wastewater	See Item 10 above.	0.14 MGD	38° 17' 27" N 77° 19' 52" W
See Attachment 3 for an excerpt of the U.S.G.S. Passapatanzy topographic map (DEQ #182D), indicating the facility's discharge location.				

11. Sludge Treatment and Disposal Methods:

The excess sludge is wasted to the aerobic digester/holding tank and hauled to the County's Dahlgren Wastewater Treatment Plant (VPDES Permit No. VA0026514) for further treatment/de-watering and disposal as needed. The de-watered sludge is disposed of at the King George Landfill operated by the Waste Management Corp.

12. Discharges, Intakes, Monitoring Stations, Other Items in Vicinity of Discharge

TABLE 2

Permit Number etc	Other VPDES permits, ambient monitoring stations, drinking water/industrial intakes
(3-MUY001.43) Monitoring Station	Ambient stream monitoring station on Muddy Creek at the State Route 3 bridge approximately 2.25 miles down stream of the receiving stream UT and Muddy Run.

13. Material Storage:

TABLE 3 - Material Storage		
Materials Description	Volume Stored	Spill/Stormwater Prevention Measures
"Sanuril" Hypochlorite Tablets for chlorination	3-5 (5 gallon buckets)	Stored in maintenance building
"Sanuril" Sodium Bisulfite Tablets for de-chlorination	3-5 (5 gallon buckets)	Stored in maintenance building
Soda Ash for pH adjustment	20-40 (40 lb. bags)	Stored in maintenance building
Diesel Fuel for the Emergency Generator	500 gallons	Stored in approved tank

- 14. Site Inspection:** Performed by Jim Olson and Jennifer Sheedy of DEQ/NRO on Sept. 22, 2005. (See **Attachment 4**).

15. Receiving Stream Water Quality and Water Quality Standards:a) Ambient Water Quality Data

The Virginia Department of Environmental Quality has one ambient monitoring station on Muddy Creek, approximately 2.25 miles downstream from the confluence of the UT and Muddy Creek. **Attachment 5** is an excerpt from the 2004 303(d) and 305(b) integrated reports (IR), which summarize data collected at the station. There were two excursions of the pH standard out of 12 samples taken on Muddy Creek.

Attachment 6 is an excerpt from the IR, which indicates, Muddy creek is listed on the 303(d) Category 5 listing for impaired waters and a TMDL is scheduled for development by 2016. The stream segment receiving the effluent, UT to Muddy Creek, is not listed in the on the 303(d) list.

b) Receiving Stream Water Quality Criteria

Part IX of 9 VAC 25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream is located within Section 4 of the Rappahannock River Basin, and classified as a Class III water-body.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

Attachment 7 details other water quality criteria applicable to the receiving stream.

Ammonia:

The 7Q10 and 1Q10 flows of the receiving stream are 0.0 MGD. In cases such as this, effluent pH and temperature data may be used to establish the ammonia water quality standard. The effluent pH and temperature data were evaluated and it was concluded that it was not significantly different than what was used previously to derive ammonia limits. **Attachment 8** is an excerpt from the previous permit detailing the criteria.

Metals Criteria:

The 7Q10 of the receiving stream is zero and no ambient data is available, the effluent data for hardness can be used to determine the metals criteria. The previous permit reissuance used the effluent value of 96 mg/l to establish criteria. There is no new hardness data available for further evaluation. Therefore this hardness value was used to determine the metals criteria in **Attachment 9**.

c) Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9 VAC 25-260-360, 370 and 380 designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, (UT to Muddy Creek), is located within Section 4 of the Rappahannock River Basin. This section was previously designated as having special standards of q and NEW-15. These standards have been repealed and this section has no designated special standards.

d) Total Nitrogen and Total Phosphorus

Significant portions of the Chesapeake Bay and its tributaries are listed as impaired on Virginia's 303(d) list of impaired waters for not meeting the aquatic life use support goal, and the draft 2004 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report indicates that 83% of the main stem of the Bay does not fully support this use support goal under Virginia's Water Quality Assessment guidelines. Nutrient enrichment is cited as one of the primary causes of impairment.

Regulation 9 VAC 25-720 requires DEQ to limit increases in nutrient loading from facilities listed on the Chesapeake Bay Program's Significant Discharger's List (SDL). DEQ has established maximum allowable watershed loads for total nitrogen and total phosphorus, and has specified annual effluent limitations for these parameters for each affected facility, as well as monitoring requirements and a special condition to be included in this permit. A significant discharger is defined as: (i) a point source discharger to the Chesapeake Bay watershed with a design capacity of 0.5 million gallons per day or greater, or an equivalent load, (ii) a point source discharger to tidal waters of the Chesapeake Bay with a design capacity of 0.1 million gallons per day or greater, or an equivalent load, (iii) a planned or newly expanding point source discharger to the Chesapeake Bay watershed, which is expected to be in operation by the end of 2010 with a permitted design of 0.5 million gallons per day or greater, or an equivalent load, or (iv) a planned or newly expanding point source discharger to the Chesapeake Bay watershed east of the fall line with a design capacity of 0.1 million gallons per day or greater, or an equivalent load, which is expected to be in operation by the end of 2010.

Since the Oakland Park WWTP met the requirements of a significant discharger, due to the fact that the CTC was issued prior to 07/01/05 and the expansion has already been completed to increase the design flow to 0.140 MGD, it was added to the final approved SDL and given a wasteload allocation for Total Phosphorus and Total Nitrogen. See **Attachment 10**.

Finally, the facility will be given a general permit in 2006, per State Water Control Law 62.1-44.19:12-19. This general permit will be the governing factor for nutrient loadings and contain a schedule for compliance.

16. Antidegradation (9 VAC 25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been designated a Tier 1 waterbody in the previous reissuance. This was based on the fact that the receiving stream is a dry ditch (7Q10 equals 0.00 MGD) under critical flow conditions. Also, segments of the receiving stream have been identified as swamp/marsh waters, which can result in the naturally occurring dissolved oxygen levels being below the established Water Quality Standards and the 305(b) list indicates that there has been 2 excursions of the pH criteria. It is Staff's Best Professional Opinion that streams such as these are tier 1. Therefore, the permit limits proposed have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development :

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. In this case since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLA's are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

- a) Effluent Screening:
Effluent data for Hydrogen Sulfide, obtained from the facility's DMRs have been reviewed and determined to be suitable for evaluation. See **Attachment 11** for a summary of the effluent data.
- b) Mixing Zones and Wasteload Allocations (WLAs):
Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o [Q_e + (f)(Q_s)] - [(C_s)(f)(Q_s)]}{Q_e}$$

Where:

WLA	=	Wasteload allocation
C _o	=	In-stream water quality criteria
Q _e	=	Design flow
Q _s	=	Critical receiving stream flow
		(1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
f	=	Decimal fraction of critical flow
C _s	=	Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10 and 1Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the C_o .

c) Effluent Limitations Toxic Pollutants, Outfall 001 –

9 VAC 25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation, 9 VAC 25-31-230.D. requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N/TKN:

The facility was given a year round TKN limit of 3.0 mg/L as part of the previous permit reissuance. A TKN limit of 3.0 mg/L assumes that the remaining nitrogen is in the form of refractory organic compounds that will not be easily oxidized and that ammonia is removed when the 3.0 mg/L TKN limit is met. This limit remains valid & is being carried forward with this reissuance. The weekly average limit will be 4.5 mg/L based on a multiplier of 1.5 times the monthly average.

2) Total Residual Chlorine:

Chlorine is used for disinfection and is potentially in the discharge. Numeric limits for Total Residual Chlorine were established as part of the previous reissuance and remain valid. A monthly average of 0.008 mg/L and a weekly average limit of 0.01 mg/L will be carried forward as part of this modification.

3) Metals/Organics:

No additional limits are needed at this time. A Total Recoverable Copper limit of 14.4 ug/l was established in the previous permit. This limit remains valid & is being carried forward with this reissuance.

4) Hydrogen Sulfide:

The DMR monitoring data was evaluated and it has been found that no limit is needed for Hydrogen Sulfide at this time. The monitoring requirements will be removed with this permit modification.

d) Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

No changes are being proposed for the dissolved oxygen (D.O.), carbonaceous biochemical oxygen demand-5 day (CBOD₅), total suspended solids (TSS), total kjeldahl nitrogen (TKN), and pH limitations.

The receiving stream is considered to be a swamp/marsh through sections of Muddy Creek to the confluence of Muddy Creek with the Rappahannock River. This was verified during the stream inspection on January 30, 2002. DEQ Guidance has been established for setting limits for swamp/marsh waters. Those limits were applied to the Oakland Park STP in the previous permit. The limits are as follows: cBod5 = 10 mg/l, TSS = 10.0 mg/l, TKN = 3.0 mg/l. The dissolved oxygen minimum for swamp/marsh waters is set at 3.0 mg/l. However, DEQ has determined that the previously established DO of 6.8 mg/l will minimize the potential impact to any aquatic organisms that might be present and insure the protection of the dissolved oxygen standards in the free flowing portions of the stream prior to the swamp/marsh area. The facility has demonstrated the ability to routinely meet the 6.8 mg/l dissolved oxygen limit. Therefore the limits will be carried forward with this reissuance.

- It is staff's practice to equate the Total Suspended Solids limits with the CBOD₅ limits. TSS limits are established to equal CBOD₅ limits since the two pollutants are closely related in terms of treatment of domestic sewage.

pH limitations are set at the water quality criteria.

e) Effluent Maximum Annual Loading Limitations and Monitoring, Outfall 001 – Nutrients

Monitoring and effluent limitations for Nitrates + Nitrites, Total Nitrogen, and Orthophosphate are included in this permit. The monitoring and limitations are needed to protect the Water Quality Standards of the Chesapeake Bay.

VPDES Regulation 9 VAC 25-31-220(D) requires effluent limitations that are protective of both the numerical and narrative water quality standards for state waters, including the Chesapeake Bay.

As discussed in Section 15, significant portions of the Chesapeake Bay and its tributaries are listed as impaired with nutrient enrichment cited as one of the primary causes. Virginia has committed to protecting and restoring the Bay and its tributaries.

The State Water Control Board adopted new Water Quality Criteria for the Chesapeake Bay in March 2005. These criteria necessitate the inclusion of TN and TP limits in permits.

In addition to the Water Quality Standards, the amended State Water Control Law (July 1, 2005) and two new regulations require nutrient limitations:

- 9 VAC 25-40 - *Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed*, requires new and expanded discharges with design flows of ≥ 0.04 MGD to treat for TN and TP to either BNR levels (TN = 8 mg/l; TP = 1.0 mg/l) or SOA levels (TN = 3.0 mg/l and TP = 0.3 mg/l), or levels determined by DEQ. Thee Concentration limits for the 0.14 MGD design flow are 4.0 and 0.3 mg/l for TN and TP respectively. The limits are included per 9VAC25-70.A.4 and are based on the concentrations used to derive the WLA per 9VAC25-720-70.C.
- 9 VAC 25-720 – *Water Quality Management Plan Regulation* sets forth TN and TP maximum wasteload allocations limiting the mass loading from facilities with design flows of ≥ 0.5 MGD lying west of the fall line or ≥ 0.1 MGD lying east of the fall line. Oakland Park has an allocation based on a flow of 0.14 MGD and TN and TP concentrations of 4.0 and 0.3 mg/l respectively. The annual loading limits in Part I.A of the permit, will become moot should the permittee be issued a general permit in accordance with 62.1-44.19:14.
-
- State Water Control Law, 62.1-44.19:12 through 62.1-44.19:19 *Chesapeake Bay Watershed Nutrient Credit Exchange Program* requires new and expanded facilities with design flows ≥ 0.04 MGD to offset nutrient loadings. The general permit is expected to be ready in 2006.

Since the General Permit is not yet available, it is necessary for this permit to contain both the TN and TP concentration and mass limits to comply with the new Bay criteria and amended statute. The Oakland Park WWTP will be required to apply and obtain the general permit when it is available for issuance.

f) Effluent Limitations and Monitoring Summary.

The effluent limitations are presented in the following table. Limits were established for Flow, BOD₅, Total Suspended Solids, Ammonia, pH, Dissolved Oxygen, Total Residual Chlorine (etc., etc.).

The limit for Total Suspended Solids is based on Best Professional Judgement.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/l), with the flow values (in MGD) and a conversion factor of 3.785.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual.

18. Antibacksliding:

All numerical limits in this permit are at least as stringent as those previously establish. Backsliding does not apply to this reissuance.

19. Effluent Limitations/Monitoring Requirements:

Design flow of this Municipal Facility is 0.06 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date or the issuance of the CTO for the 0.14 MGD facility.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS						MONITORING REQUIREMENTS	
		Monthly Average		Weekly Average		Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL		N/A		N/A	NL	Continuous	TIRE
CBOD ₅	2,3	10 mg/L	2.3 kg/day	15mg/L	3.4 kg/day	N/A	N/A	1/W	4H-C
Total Suspended Solids	2	10.0 mg/L	2.3 kg/day	15.0 mg/L	3.4 kg/day	N/A	N/A	1/W	4H-C
TKN	2,3	3.0 mg/L	0.7 kg/day	4.5 mg/L	1.0 kg/day	N/A	N/A	1/W	4H-C
pH	3	N/A		N/A		6.0 S.U.	9.0 S.U.	1/D	Grab
DO	3	N/A		N/A		6.8 mg/L	N/A	1/D	Grab
Total Phosphorus	2	2.0 mg/l	0.5kg/d	3.0 mg/l	0.7 kg/d	N/A	N/A	N/A	Grab
Total Recoverable Copper	3	14.4 µg/L		14.4 µg/L		N/A	N/A	1/M	Grab
Chlorine, Total Residual after contact tank	4	N/A		N/A		1.0 mg/l	N/A	3/D @ 4 hr. intervals	Grab
Chlorine, Total Residual after dechlorination	3	0.007 mg/L		0.008 mg/L		N/A	N/A	1/D	Grab

The basis for the limitations codes are:

- | | | |
|----------------------------------|---|--------------------------------|
| 1. Federal Effluent Requirements | <i>MGD</i> = Million gallons per day. | <i>1/D</i> = Once every day. |
| 2. Best Professional Judgement | <i>N/A</i> = Not applicable. | <i>1/W</i> = Once every week. |
| 3. Water Quality Standards | <i>NL</i> = No limit; monitor and report. | <i>1/M</i> = Once every month. |
| 4. DEQ Disinfection Guidance | <i>S.U.</i> = Standard units. | |
| | <i>TIRE</i> = Totalizing, indicating and recording equipment. | |
| | <i>IS</i> = Immersion stabilization. | |

4H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the Monitored 4-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of four (4) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum of four (4) grab samples obtained at hourly or smaller intervals may be collected. Where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by ±10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

19. Effluent Limitations/Monitoring Requirements:

Design flow of this facility is 0.140 MGD.

Effective Dates: During the period beginning with the issuance of the CTO for the 0.140 MGD facility and lasting until December 31, 2010 or the permit's expiration date, whichever comes first.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS						MONITORING REQUIREMENTS	
		Monthly Average		Weekly Average		Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL		N/A		N/A	NL	Continuous	TIRE
CBOD ₅ (mg/L)	3,5	10 mg/L	5.3 kg/day	15mg/L	7.9 kg/day	N/A	N/A	3D/W	8H-C
TSS mg/L	2	10.0 mg/L	5.3 kg/day	15.0 mg/L	7.9 kg/day	N/A	N/A	3D/W	8H-C
TKN mg/L	2,3	3.0 mg/L	1.6 kg/d	4.5 mg/L	2.4 kg/d	N/A	N/A	1/2W	8H-C
Nitrate+Nitrite, as N mg/L	3	NL	NL	N/A		N/A	N/A	1/2W	Grab
Total Nitrogen mg/L ***	3	NL		N/A		N/A	N/A	1/2W	Calculated
Total Nitrogen lbs/month	3	N/A		N/A		N/A	NL lbs/m	1/M	Calculated
Total Nitrogen calendar year	3	NL mg/l		N/A		N/A	NL lbs/yr	1/M	Calculated
Orthophosphate	3	NL	NL	N/A		N/A	N/A	1/2W	Grab
Total Phosphorus mg/L	3	2.0 mg/l	1.1 kg/d	3.0 mg/l	1.6 kg/d	N/A	N/A	1/2W	Grab
Total Phosphorus lbs/month	3	N/A		N/A		N/A	NL	1/M	Calculated
Total Phosphorus calendar year	3	NL mg/L		N/A		N/A	NL lbs/yr	1/M	Calculated
pH (s.u.)	3	N/A		N/A		6.0 s.u.	9.0 s.u.	1/D	Grab
Dissolved Oxygen (mg/L)	2,3	N/A		N/A		6.8 mg/L	N/A	1/D	Grab
Total Recoverable Copper	3	14.4 µg/L		14.4 µg/L		N/A	N/A	1/M	Grab
Chlorine, Total Residual after contact tank	4	N/A		N/A		1.0 mg/l	N/A	3/D @ 4 hr. intervals	Grab
Chlorine, Total Residual after dechlorination	3	0.007 mg/L		0.008 mg/L		N/A	N/A	1/D	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards
4. DEQ Disinfection Guidance

MGD = Million gallons per day.

N/A = Not applicable.

NL = No limit; monitor and report.

S.U. = Standard units.

TIRE = Totalizing, indicating and recording equipment.

IS = Immersion stabilization.

1/D = Once every day.

3D/W = Three days a week.

1/2W = Once every two weeks.

1/M = Once per month.

1/YR = Once per year.

8H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the Monitored 8-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of eight (8) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum of eight (8) grab samples obtained at hourly or smaller intervals may be collected. Where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by =10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

*** Total Nitrogen = Sum of TKN plus Nitrate+Nitrite

See Section 22.q. for the calculation of the Monthly Average Load and Annual Effluent Load and Nutrient Loading Calculations.

19. Effluent Limitations/Monitoring Requirements:

Design flow of this facility is 0.140 MGD.

Effective Dates: During the period beginning January 1, 2011, and lasting until the permit's expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS			
		Monthly Average		Weekly Average		Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL		N/A		N/A	NL	Continuous	TIRE
CBOD ₅ (mg/L)	3,5	10 mg/L	5.3 kg/day	15 mg/L	7.9 kg/day	N/A	N/A	3D/W	8H-C
TSS mg/L	2	10.0 mg/L	5.3 kg/day	15.0 mg/L	7.9 kg/day	N/A	N/A	3D/W	8H-C
TKN mg/L	2,3	3.0 mg/L	1.6 kg/d	4.5 mg/L	2.4 kg/d	N/A	N/A	1/2W	8H-C
Nitrate+Nitrite, as N mg/L	3	NL	NL	N/A		N/A	N/A	1/2W	Grab
Total Nitrogen mg/L ***	3	NL		N/A		N/A	N/A	1/2W	Calculated
Total Nitrogen lbs/month	3	N/A		N/A		N/A	NL lbs/m	1/M	Calculated
Total Nitrogen calendar year	3	4.0 mg/L		N/A		N/A	1706 lbs/yr	1/M	Calculated
Orthophosphate	3	NL	NL	N/A		N/A	N/A	1/2W	Grab
Total Phosphorus mg/L	3	NL		N/A		N/A	N/A	1/2W	Grab
Total Phosphorus lbs/month	3	N/A		N/A		N/A	NL	1/M	Calculated
Total Phosphorus calendar year	3	0.3 mg/L		N/A		N/A	128 lbs/yr	1/M	Calculated
pH (s.u.)	3	N/A		N/A		6.0 s.u.	9.0 s.u.	1/D	Grab
Dissolved Oxygen (mg/L)	2,3	N/A		N/A		6.8 mg/L	N/A	1/D	Grab
Total Recoverable Copper	3	14.4 µg/L		14.4 µg/L		N/A	N/A	1/M	Grab
Chlorine, Total Residual after contact tank	4	N/A		N/A		1.0 mg/l	N/A	3/D @ 4 hr. intervals	Grab
Chlorine, Total Residual after dechlorination	3	0.007 mg/L		0.008 mg/L		N/A	N/A	1/D	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards
4. DEQ Disinfection Guidance

MGD = Million gallons per day.

N/A = Not applicable.

NL = No limit; monitor and report.

S.U. = Standard units.

TIRE = Totalizing, indicating and recording equipment.

IS = Immersion stabilization.

1/D = Once every day.

3D/W = Three days a week.

1/2W = Once every two weeks.

1/M = Once per month.

1/YR = Once per year.

8H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the Monitored 8-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of eight (8) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum of eight (8) grab samples obtained at hourly or smaller intervals may be collected. Where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by =10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

*** Total Nitrogen = Sum of TKN plus Nitrate+Nitrite

See Section 22.q. for the calculation of the Monthly Average Load and Annual Effluent Load and Nutrient Loading Calculations.

20. Other Permit Requirements :

- a) Part I.B. of the permit contains additional chlorine monitoring requirements, quantification levels and compliance reporting instructions.

Minimum chlorine residual must be maintained at the exit of the chlorine contact tank to assure adequate disinfection. No more than 10% of the monthly test results for TRC at the exit of the chlorine contact tank shall be <1.0 mg/L with any TRC <0.6 mg/L considered a system failure. Monitoring at numerous STPs has concluded that a TRC residual of 1.0 mg/L is an adequate indicator of compliance with the *E. coli* criteria. *E. coli* limits are defined in this section as well as monitoring requirements to take effect should an alternate means of disinfection be used.

9 VAC 25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9 VAC 25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

- b) Part I.C. of the permit details the requirements for a Schedule of Compliance.

The VPDES Permit Regulation, 9 VAC 25-31-250 allows use of Compliance Schedules to allow facilities sufficient time for upgrades to meet newly established effluent limits. The permit contains newly established limits for Total Nitrogen and Total Phosphorus. Since the facility was not designed to meet these limits, a schedule of compliance is required to provide the permittee time for facility upgrade. The permittee shall achieve compliance with the final limits specified in Part I.A. of the VPDES permit in accordance with the following schedule as contained in Part I.C. of the permit:

Action	Time Frame
1. Select engineering firm for design of facilities or submit proposed plans to achieve compliance with final limits.	Within 180 days after the effective date of the permit.
2. Report of progress on attainment of final limits.	The first annual report is twelve months after the effective date of the permit.
3. Complete construction of the upgraded facility for the control of nutrients	Not later than December 31, 2010
4. Achieve compliance with final permit limits.	Not later than December 31, 2011

Should the Permittee obtain the general permit, it will become the governing factor for the nutrient loadings and contain a schedule for compliance. That compliance schedule will supercede this special condition.

21. Other Special Conditions :Permit Part I.D.

1. 95% Capacity Reopener. The VPDES Permit Regulation at 9 VAC 25-31-200.B.2. requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. This facility is a POTW. (or) The facility is a PVOTW.
2. Indirect Dischargers. Required by VPDES Permit Regulation, 9 VAC 25-31-280 B.9 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.
3. O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190.E. Within 90 days of the effective date of this permit, the permittee shall submit for approval an Operations and Maintenance (O&M) Manual **OR** a statement confirming the accuracy and completeness of the current O&M Manual to the Department of Environmental Quality, Northern Virginia Regional Office (DEQ-NVRO). Future changes to the facility must be addressed by the submittal of a revised O&M Manual within 90 days of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.
4. CTC, CTO Requirement. The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.
5. Licensed Operator Requirement. The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9 VAC 25-31-200 D, and Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq.) requires licensure of operators. This facility requires a Class III operator.
6. Reliability Class. The Sewage Collection and Treatment Regulation at 9 VAC 25-790 requires sewerage works achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. The facility is required to meet a reliability Class of I.
7. Sludge Reopener. The VPDES Permit Regulation at 9 VAC 25-31-200.C.4. requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works.
8. Sludge Use and Disposal. The VPDES Permit Regulation at 9 VAC 25-31-100.P., 220.B.2., and 420-720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. Technical requirements may be derived from the Virginia Department of Health's Biosolids Use Regulations, 12 VAC 5-585-10 et seq. The facility includes a treatment works treating domestic sewage.
9. Nutrient Reporting Calculations. For each calendar month, the DMR shall show the total monthly load (kg) and the cumulative load (kg) for the calendar year, to date calculated in accordance with the following formulae:

$$ML = ML_{avg} * d$$

where:

ML = total monthly load (kg)

ML_{avg} = monthly average load as reported on DMR (kg/d)

d = number of discharge days in the calendar month

$$AL-YTD = ?_{(Jan-current\ month)} ML$$

where:

AL-YTD = calendar year-to-date annual load in kg

The total nitrogen load and total phosphorus load for each calendar year (AL) shall be shown on the December DMR due January 10th of the following year.

Annual Concentration - For each calendar month, the DMR shall show the monthly average concentration and the cumulative average concentration for the calendar year to date calculated in accordance with the following formulae: $MA = S \cdot c / \# \text{ of samples}$

where:

MA = Monthly Average Concentration

c = Sample Concentration

$$AA = S \cdot MA_{(\text{Jan} - \text{Current month})} / \# \text{ of months}$$

The total nitrogen and total phosphorus average concentration for each year (AA) shall be reported on the December DMR due January 10th of the following year.

Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:

- a) Special Conditions:
The nutrient reporting calculations and the nutrient trading and offsets special conditions have been added.
- b) Monitoring and Effluent Limitations:
The requirement for hydrogen sulfide monitoring has been removed from the permit.

24. Variances/Alternate Limits or Conditions: None

25. Public Notice Information:

First Public Notice Date: May 3rd, 2006

Second Public Notice Date: May 10th, 2006

Public Notice Information is required by 9 VAC 25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: Northern Virginia DEQ Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3836 or by email at jaolson@deq.virginia.gov. See **Attachment 12** for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

26. 303 (d) Listed Stream Segments and Total Max. Daily Loads (TMDL):

This facility does not discharge to a segment of the receiving stream that is listed on the current 303(d) listing for impaired waters.

27. Additional Comments:

Previous Board Action(s): The facility is currently negotiating a Consent Special Agreement with DEQ for other compliance issues.

Staff Comments: None

Public Comment: No public comments were received during the comment period.

EPA Checklist: The checklist can be found in **Attachment 13**.

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
Water Quality Assessments and Planning
629 E. Main Street P.O. Box 10009 Richmond, Virginia 23240

SUBJECT: Flow Frequency Determination
Oakland Park WWTP - VA#0086789

TO: James Olson, NRO

FROM: Paul Herman, WQAP

DATE: August 14, 1996

COPIES: Ron Gregory, Charles Martin, File

The Oakland Park WWTP discharges to an unnamed tributary to the Muddy Creek near Passapatanzy, VA. Stream flow frequencies are required at this site for use by the permit writer in developing effluent limitations for the VPDES permit.

At the discharge point, the receiving stream is depicted as intermittent on the USGS Passapatanzy Quadrangle topographic map. The flow frequencies for intermittent streams are 0.0 cfs for the 1Q10, 7Q10, 30Q5, high flow 1Q10, high flow 7Q10, and the harmonic mean. The drainage area above the discharge point is 0.51 mi². Flow frequencies have been provided below for the first perennial stream downstream of the discharge point. This point is on Muddy Creek just upstream of the unnamed intermittent discharge receiving stream and will be called the perennial point for the remainder of this memo.

The VDEQ operated a continuous record gage on the Cat Point Creek near Montross, VA (#01668500) since 1943. The gage is located at the Route 637 bridge in Richmond County, VA. The flow frequencies for the gage and the perennial point are presented below. The values at the perennial point were determined by drainage area proportions and do not address any withdrawals, discharges, or springs lying upstream.

Cat Point Creek near Montross, VA (#01668500):

Drainage Area = 45.6 mi²

1Q10 = 0.02 cfs - 0.0	High Flow 1Q10 = 5.5 cfs - 6.8
7Q10 = 0.10 cfs - 0.5	High Flow 7Q10 = 7.6 cfs - 4.9
30Q5 = 1.5 cfs - 1.3	HM = 0.0 cfs
30Q10 = 0.58	High Flow 30Q10 = 14

The harmonic mean is zero due to the presence of zero flow

High Flow months - Dec-May

ATTACHMENT 1

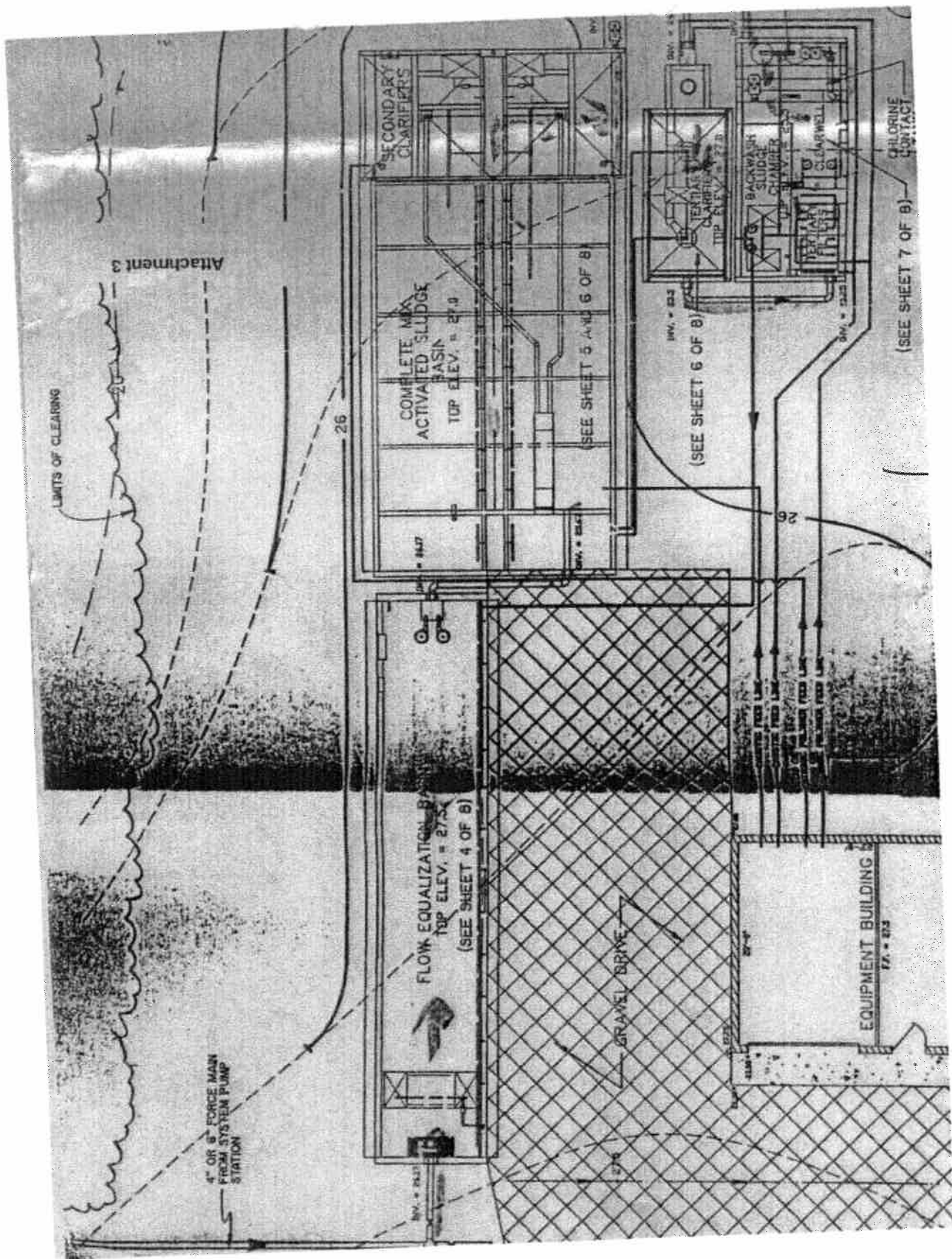
values in the data set.

Muddy Creek at perennial point:

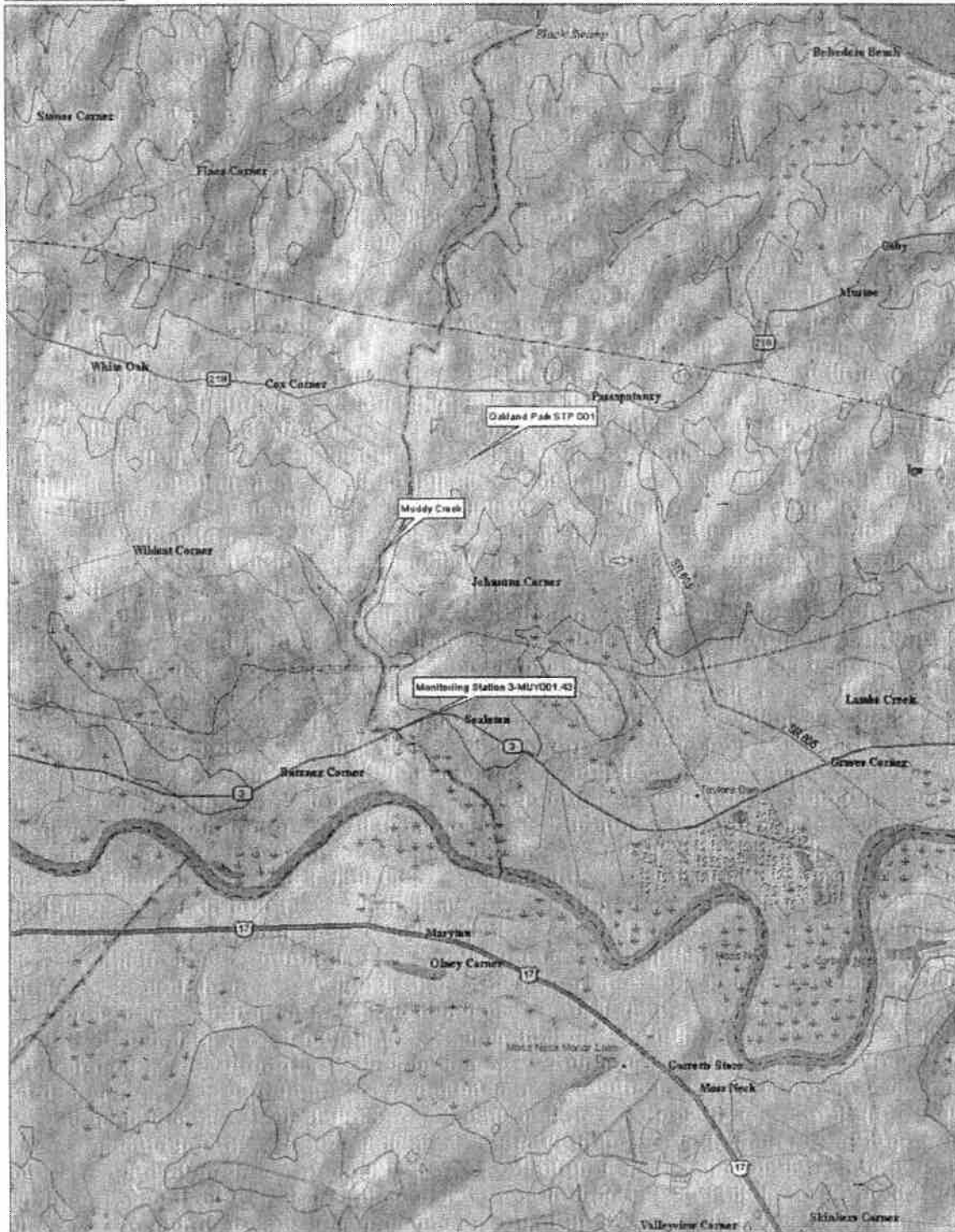
Drainage Area = 1.2 mi ²	
1Q10 = 0.001 cfs	High Flow 1Q10 = 0.14 cfs
7Q10 = 0.003 cfs	High Flow 7Q10 = 0.20 cfs
30Q5 = 0.039 cfs	HM = 0.0 cfs

The high flow months are December through May. If you have any questions concerning this analysis, please let me know.

ATTACHMENT 1



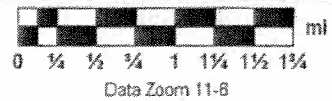
ATTACHMENT 2



Data use subject to license.

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01/12/2006

MEMORANDUM

TO: Permit Reissuance File

FROM: Jim Olson - NRO

SUBJECT: Site Visit of Oakland park STP VA0086789

The purpose of this memo is to detail the facility site and outfall inspection conducted at the facility cited above, on September 22, 2005. This visit was conducted to gather information for a requested permit modification / reissuance to increase the flow capacity of the plant.

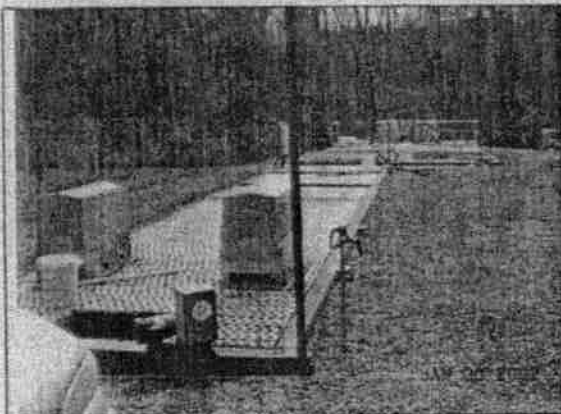
Sewage from the subdivision's collection system gravity flows to a central pumping station located near the entrance of the STP. The station is a "Purestream" package unit with two centrifugal pumps. Flow gets pumped to the plant and enters through the head-works unit which contains a comminutor and a backup bar rack unit, prior to the aerated flow equalization basins. Float actuated submersible pumps then pump the sewage to the secondary aeration basins which have diffused aeration and are operated in the extended aeration mode. Effluent from the aeration basin is sent to two secondary clarifiers. Sludge is re-circulated to the aeration basins using air-lift return sludge pumps. The air is supplied by two rotary blowers which are alternated in operation. The secondary effluent can be chlorinated (Sanuril tablet feed system) prior to the tertiary filters to prevent algae growth. The tertiary filters have multi-media (anthracite coal and sand) beds. Backwash flow from the filters is recycled to the head of the plant.

Final disinfection and de-chlorination of the effluent is accomplished using "Sanuril" tablet feed units located prior to the post aeration basin. The flow is then discharged to the outfall 001 at the UT of Muddy Creek, which is approximately 300 feet below the plant.

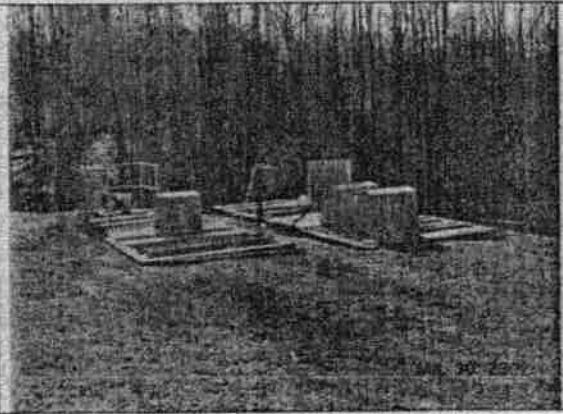
Excess sludge is wasted to the aerobic digester/holding tank and hauled to the County's Dahlgren Wastewater Treatment Plant (VPDES Permit No. VA0026514) for final treatment and disposal.

Pictures of the facility are attached.

ATTACHMENT 4

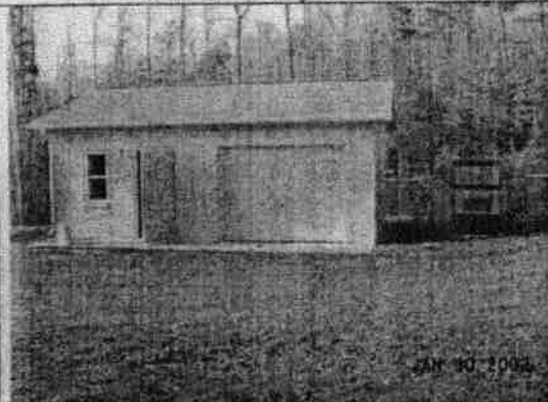


Oakland Park WWTP. Head of the plant,
Equalization Basin, Aeration Basin
and Secondary Clarifiers.

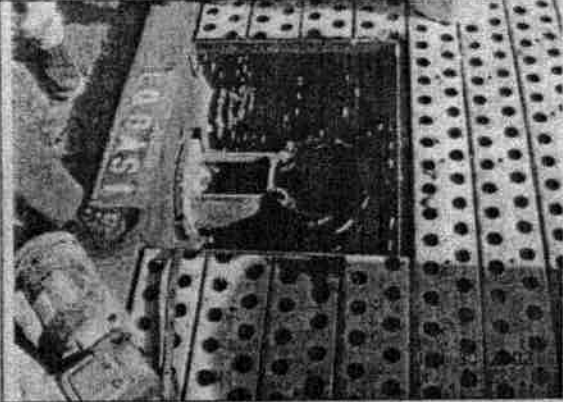


Tertiary Clarifiers

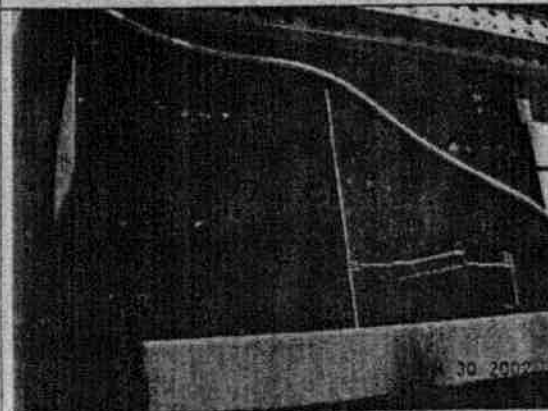
Tertiary Filters,
Chlorination and
Dechlorination.



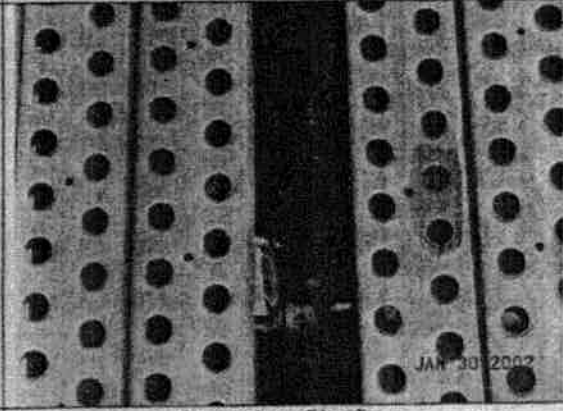
Control Building and Laboratory



Comminutor (non-operational) and bar screen at
the head of the plant.



Aeration Basin



Secondary Clarifiers

Monitoring Station List for 2004-2010 and 2010 Integrated Report									
Station ID	Station Name	Location	Agency	Year	Year	Year	Year	Year	Year
1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4
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97	97	97	97	97	97	97	97	97	97
98	98	98	98	98	98	98	98	98	98
99	99	99	99	99	99	99	99	99	99
100	100	100	100	100	100	100	100	100	100

Fact Sheets for Category 5 Waters

RIVER BASIN: Rappahannock River Basin
CITY/COUNTY: King George, Stafford
STREAM NAME: Muddy Creek
HYDROLOGIC UNIT: 02080104
TMDL ID: VAN-E21R-01
ASSESSMENT CATEGORY: 5C
SEGMENT SIZE: 3.87 - Miles
INITIAL LISTING: 2004 **TMDL SCHEDULE:** 2016
UPSTREAM LIMIT:

DESCRIPTION: Confluence of an unnamed tributary
RIVER MILE: 3.87
LATITUDE: 38.28892 **LONGITUDE:** -77.33985

DOWNSTREAM LIMIT:

DESCRIPTION: Confluence with the Rappahannock River
RIVER MILE: 0.00
LATITUDE: 38.24633 **LONGITUDE:** -77.32694

Segment begins at the confluence of an unnamed tributary to Muddy Creek, approximately 0.7 rivermiles downstream from Route 218, and continues downstream to the confluence with the Rappahannock River.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Not Supporting

IMPAIRMENT CAUSE: pH (2004)

Sufficient excursions from the pH water quality criteria were recorded at DEQ's ambient water quality monitoring station 3-MUY001.43 at Route 3 to assess this segment as not supporting of the Aquatic Life Use goal in the 2004 water quality assessment. Two (2) of 12 samples (16.7%) were below the lower range (6.0 SU) of the pH water quality criteria for Class III waters as established in 9 VAC 25-260-50 of the Virginia Water Quality Standards. The pH excursions may be attributable to natural conditions as this segment is a low-lying Coastal Plain environment with no riffles and slow moving pools that are subject to low pH.

IMPAIRMENT SOURCE: Unconfirmed natural conditions

The source of the impairment is unknown, but is believed to be attributable to natural conditions.

STATE WATER CONTROL BOARD
9 VAC 25-260 Virginia Water Quality Standards.
Statutory Authority: § 62.1-44.15 3a of the Code of Virginia.
EFFECTIVE AUGUST 10, 2005

9 VAC 25-260-50. Numerical criteria for dissolved oxygen, pH, and maximum temperature.***

CLASS	DESCRIPTION OF WATERS	DISSOLVED OXYGEN (mg/L)****		pH	Maximum Temp. (°C)
		Min.	Daily Avg.		
I	Open Ocean	5.0	--	6.0-9.0	--
II	Tidal Waters in the Chowan Basin and the Atlantic Ocean	4.0	5.0	6.0-9.0	--
II	Tidal Waters in the Chesapeake Bay and its tidal tributaries	See 9VAC 25-260-185		6.0-9.0	
III	Nontidal Waters Coastal and Piedmont Zones	4.0	5.0	6.0-9.0	32
IV	Mountainous Zones Waters	4.0	5.0	6.0-9.0	31
V	Stockable Trout Waters	5.0	6.0	6.0-9.0	21
VI	Natural Trout Waters	6.0	7.0	6.0-9.0	20
VII	Swamp Waters	*	*	4.3-9.0*	**

* This classification recognizes that the natural quality of these waters may fall outside of the ranges for D.O. and pH set forth above as water quality criteria; therefore, on a case-by-case basis, criteria for specific Class VII waters can be developed which reflect the natural quality of the waterbody. Virginia Pollutant Discharge Elimination System limitations in Class VII waters shall meet pH of 6.0 - 9.0.

** Maximum temperature will be the same as that for Classes I through VI waters as appropriate.

*** The water quality criteria in this section do not apply below the lowest flow averaged arithmetic mean over a period of seven consecutive days that can be statistically expected to occur once every 10 climatic years (a climatic year begins April 1 and ends March 31.)

**** See 9 VAC 25-260-55 for implementation of these criteria in waters naturally low in dissolved oxygen.

9 VAC 25-260-55. Implementation procedure for dissolved oxygen criteria in waters naturally low in dissolved oxygen.

- A. The board shall implement this procedure when assessing dissolved oxygen data in preparation of Clean Water Act §§ 305(b) and 303(d) reports in accordance with § 62.1-44.19.5 of the Water Quality Monitoring Information and Restoration Act. The board recognizes that dissolved oxygen concentrations may seasonally fall below the criteria established in 9 VAC 25-260-50 due to nonanthropogenic sources and physical and chemical processes resulting from:
 1. Density stratification and depth in Class II waters that prevent mixing and reaeration of the deep waters,
 2. Temperature stratification and depth in lakes and reservoirs in Class III, IV, V and VI waters that prevent mixing and re-aeration of the deep waters, or
 3. Minimal flow velocity and decomposition of vegetation that prevent mixing and reaeration of stagnant, shallow waters.
- B. In preparation of the Clean Water Act §§ 305(b) and 303(d) reports the board shall list waters as naturally impaired in accordance with § 62.1-44.19.5 C of the Code of Virginia when the board determines that the low dissolved oxygen concentrations result from nonanthropogenic sources and the physical and chemical processes described in subsection A of this section. The board shall make this determination based upon an evaluation of aquatic life, habitat (including anadromous fish spawning areas), monitoring data, computer modeling results or other accepted scientific principles. The board shall also conduct a watershed assessment to document anthropogenic sources that individually or cumulatively cause low dissolved oxygen concentrations including locating and identifying all point and nonpoint sources of pollution and identifying any man-made activities (such as water withdrawals) that cause low flow conditions and result in low dissolved oxygen levels.
- C. The proposed determinations in subsection B of this section shall be subject to public comment on draft 303(d) reports.
- D. The final determinations in subsection B of this section shall be made available to the public in final 303(d) reports.
- E. Following a determination made under subsection B of this section, the board shall initiate a rulemaking to set site-specific criteria that reflect the natural quality of that water body or segment.

9 VAC 25-260-60 Rise Above Natural Temperature

Any rise above natural temperature shall not exceed 3°C except in the case of Class VI waters (natural trout waters,) where it shall not exceed 1°C. However, the Board can, on a case-by-case basis, impose a more stringent limit on the rise above natural temperature. Natural temperature is defined as that temperature of a body of water (measured as the arithmetic average over one hour) due solely to natural conditions without the influence of any point-source discharge.

9 VAC 25-260-70. Maximum hourly temperature change.

The maximum hourly temperature change shall not exceed 2°C, except in the case of Class VI waters natural trout waters where it shall not exceed 0.5°C. These criteria shall apply beyond the boundaries of mixing zones and are in addition to temperature changes caused by natural conditions.

9 VAC 25-260-80. Thermal discharges into lakes and impoundments.

In lakes and impoundments receiving thermal discharges, the temperature of the epilimnion, or surface water when there is no stratification, shall not be raised more than 3°C above that which existed before the addition of heat of artificial origin. The board may, on a case-by-case basis, impose a more stringent limit on temperature rise. The increase shall be based on the monthly average of the maximum daily temperature. The temperature of releases from these lakes and impoundments shall be consistent with standards established for the receiving waters. When an applicant for a permit proposes either a discharge of heated effluent into the hypolimnion or the pumping of water from the hypolimnion for return back into the same body of water, such practice shall not be approved unless a special study shows that the practice will not produce adverse effects.

9 VAC 25-260-90. Site-specific temperature requirements.

- A. The temperature limits set forth in 9 VAC 25-260-50 through 9 VAC 25-260-80 may be superseded in certain locations by Site-Specific Temperature Criteria or in the case where a thermal variance demonstration is performed in accordance with § 316(a) of the Clean Water Act. The protocol for development of site-specific temperature requirements is found in subsection A of this section. Information regarding § 316(a) demonstrations is found in subsection B of this section.
- B. Protocol for Developing Site-Specific Temperature Criteria. For any specified time of year there shall be two upper limiting temperatures for a location based on temperature requirements of important sensitive species found at the location at that time. These limiting temperatures are:
 1. A maximum weekly average temperature that:
 - a. In the warmer months is determined by adding to the physiological optimum temperature (usually the optimum for growth) for the most sensitive important species (and appropriate life stage) that normally is found at that location and time; a factor calculated as one third of the difference between the ultimate upper incipient lethal temperature and the optimum temperature for that species;
 - b. In the cooler months is an elevated temperature that would still ensure that important species would survive if the temperature suddenly dropped to the normal ambient temperature;
 - c. During reproduction seasons meets specific site requirements for successful migration, spawning, egg incubation, fry rearing, and other reproductive functions of important species; and
 - d. At a specific site is found necessary to preserve normal species diversity or prevent undesirable growths of nuisance organisms.
 2. A time-dependent maximum temperature for short exposures.

Baseline thermal conditions shall be measured at a site where there is no unnatural thermal addition from any source, which site is in reasonable proximity to the thermal discharge (within five miles), and which has similar hydrography to that of the receiving waters at the point of discharge.

Criteria development should be in accordance with Water Quality Criteria 1972: A Report of the Committee on Water Quality Criteria and Quality Criteria for Water, U.S. Environmental Protection Agency.
- C. § 316(a) Determinations. A successful demonstration accepted by the board concerning thermal discharge limits carried out under § 316(a) of the Clean Water Act shall constitute compliance with the temperature requirements of these standards. A successful demonstration must assure the protection and propagation of a balanced indigenous population of aquatic species and wildlife in or on the water into which the discharge is made. When making a determination concerning thermal discharge limits under § 316(a) of the Clean Water Act, the board shall provide notice and opportunity for a public hearing.

9 VAC 25-260-140. Criteria for surface water.

- A. Instream water quality conditions shall not be acutely² or chronically³ toxic except as allowed in 9 VAC 25-260-20 B mixing zones. The following are definitions of acute and chronic toxicity conditions:

"Acute toxicity" means an adverse effect that usually occurs shortly after exposure to a pollutant. Lethality to an organism is the usual measure of acute toxicity. Where death is not easily detected, immobilization is considered equivalent to death.

"Chronic toxicity" means an adverse effect that is irreversible or progressive or occurs because the rate of injury is greater than the rate of repair during prolonged exposure to a pollutant. This includes low level, long-term effects such as reduction in growth or reproduction.
- B. The following table is a list of numerical water quality criteria for specific parameters.

When information has become available from the Environmental Protection Agency to calculate additional aquatic life or human health criteria not contained in the table, the board may employ these values in establishing effluent limitations or other limitations pursuant to 9 VAC 25-260-20 A necessary to protect designated uses until the board has completed the regulatory standards adoption process.

Table of Parameters ⁶

PARAMETER - CAS Number	USE DESIGNATION					
	AQUATIC LIFE				HUMAN HEALTH	
	FRESHWATER		SALTWATER		Public Water Supply ³	All Other Surface Waters ⁴
	Acute ¹	Chronic ²	Acute ¹	Chronic ²		
Acenaphthene (µg/l) - 83329					1,200	2,700
Acrolein (µg/l) - 107028					320	780
Acrylonitrile (µg/l) - 107131 ^(b)					0.59	6.6
Aldrin (µg/l) - 309002 ^(b)	3.0		1.3		0.0013	0.0014
Ammonia (µg/l) - 766-41-7 Chronic criterion is a 30-day average concentration not to be exceeded more than once every three 3 years on the average. (see 9 VAC 25-260-155)						
Anthracene (µg/l) - 120127					9,600	110,000
Antimony (µg/l) - 7440360					14	4,300
Arsenic (µg/l) ⁵⁾ - 7440382	340	150	69	36	10	
Bacteria (see 9 VAC 25-260-160 and 170)						
Barium (µg/l) - 7440393					2,000	
Benzene µg/l - 71432 ^(b)					12	710
Benidine (µg/l) - 92875 ^(b)					0.0012	0.0054
Benzo (a) anthracene (µg/l) - 56553 ^(b)					0.044	0.49
Benzo (b) fluoranthene (µg/l) - 205992 ^(b)					0.044	0.49
Benzo (k) fluoranthene (µg/l) - 207089 ^(b)					0.044	0.49
Benzo (a) pyrene (µg/l) - 50328 ^(b)					0.044	0.49
Bis2-Chloroethyl Ether (µg/l) - 111444 ^(b)					0.31	14
Bis2-Chloroisopropyl Ether (µg/l) - 39638329					1,400	170,000
Bromoform (µg/l) - 75252 ^(b)					44	3,600
Butyl benzyl phthalate (µg/l) - 85687					3,000	5,200
Cadmium (µg/l) ⁵⁾ - 7440439 ^(d) Freshwater acute criterion (µg/l) WER $\left[e^{\{1.128[\ln(\text{hardness})] - 3.828\}} \right]$ Freshwater chronic criterion (µg/l) WER $\left[e^{\{0.7852[\ln(\text{hardness})] - 3.490\}} \right]$	3.9 WER = 1 CaCO ₃ =100	1.1 WER = 1 CaCO ₃ = 100	40 WER=1	8.8 WER=1	5	
Carbon tetrachloride (µg/l) - 56235 ^(b)					2.5	44
Chlordane (µg/l) - 57749 ^(b)	2.4	0.0043	0.09	0.0040	0.021	0.022
Chloride (µg/l) - 16887006 ^(a)	860,000	230,000			250,000	
Chlorine, Total Residual (µg/l) - 7782505 In DGIF class i and ii trout waters (9 VAC 25-260 subsections 390-540) or waters with threatened or endangered species are subject to the halogen ban (subsection 110.)	19 See 9 VAC 25-260-110	11 See 9 VAC 25-260-110				
Chlorine Produced Oxidant (µg/l) - 7782505			13	7.5		
Chlorobenzene (µg/l) - 108907					680	21,000
Chlorodibromomethane (µg/l) - 124481 ^(b)					4.1	340
Chloroform (µg/l) - 67663 Known or suspected carcinogen; however, non-carcinogen calculation used and is protective of carcinogenic effects. Use 30Q5 as default design flow (see footnote 6.)					350	29,000
2-Chloronaphthalene (µg/l) - 91587					1,700	4,300

PARAMETER - CAS Number	USE DESIGNATION					
	AQUATIC LIFE				HUMAN HEALTH	
	FRESHWATER		SALTWATER		Public Water Supply ³	All Other Surface Waters ⁴
	Acute ¹	Chronic ²	Acute ¹	Chronic ²		
2-Chlorophenol (µg/l) - 95578					120	400
Chlorpyrifos (µg/l) - 2921882	0.083	0.041	0.011	0.0056		
Chromium III (µg/l) ⁵ - 16065831 Freshwater acute criterion (µg/l) $WER [e^{0.8190[\ln(\text{hardness})]+3.7256}] (CF_a)$ Freshwater chronic criterion (µg/l) $WER [e^{0.8190[\ln(\text{hardness})]+0.6848}] (CF_c)$ $CF_a = 0.316$ $CF_c = 0.860$	570 (WER=1; CaCO ₃ =100)	74 (WER=1; CaCO ₃ =100)			100 (total Cr)	
Chromium VI (µg/l) ⁵ - 18540299	16	11	1,100	50		
Chrysene (µg/l) - 218019 ^(b)					0.044	0.49
Copper (µg/l) ^{5 (a)} - 7440508 Freshwater acute criterion (µg/l) $WER [e^{0.9422[\ln(\text{hardness})]-1.700}] (CF_a)$ Freshwater chronic criterion µg/l $WER [e^{0.8545[\ln(\text{hardness})]-1.702}] (CF_c)$ $CF_a = 0.960$ $CF_c = 0.960$ Acute saltwater criterion is a 24-hour average not to be exceeded more than once every three years on the average.	13 WER=1 CaCO ₃ =100	9.0 WER=1 CaCO ₃ =100	9.3 WER=1	6.0 WER=1	1,300	
Cyanide (µg/l) - 57125	22	5.2	1.0	1.0	700	220,000
DDE (µg/l) - 72548 ^(b)					0.0083	0.0084
DDE (µg/l) - 72559 ^(b)					0.0059	0.0059
DDT (µg/l) - 50293 ^(b)	1.1	0.0010	0.13	0.0010	0.0059	0.0059
Demeton (µg/l) - 8065483		0.1		0.1		
Dibenz (a,h) anthracene (µg/l) - 53703 ^(b)					0.044	0.49
Dibutyl phthalate µg/l - 84742					2,700	12,000
Dichloromethane (µg/l) - 75092 ^(b) Synonym = Methylene Chloride					47	16,000
1,2-Dichlorobenzene (µg/l) - 95501					2,700	17,000
1,3-Dichlorobenzene (µg/l) - 541731					400	2,600
1,4 Dichlorobenzene (µg/l) - 106467					400	2,600
3,3 Dichlorobenzidine (µg/l) - 91941 ^(b)					0.4	0.77
Dichlorobromomethane (µg/l) - 75274 ^(b)					5.6	460
1,2 Dichloroethane (µg/l) - 107062 ^(b)					3.8	990
1,1 Dichloroethylene (µg/l) - 75354					310	17,000
1,2-trans-dichloroethylene (µg/l) - 156605					700	140,000
2,4 Dichlorophenol (µg/l) - 120832					93	790
2,4 Dichlorophenoxy acetic acid (2,4-D) (µg/l) - 94757					100	
1,2-Dichloropropane (µg/l) - 78875 ^(b)					5.2	390
1,3-Dichloropropene (µg/l) - 542756					10	1,700
Dieldrin (µg/l) - 60571 ^(b)	0.24	0.056	0.71	0.0019	0.0014	0.0014

PARAMETER - CAS Number	USE DESIGNATION					
	AQUATIC LIFE				HUMAN HEALTH	
	FRESHWATER		SALTWATER		Public Water Supply ³	All Other Surface Waters ⁴
	Acute ¹	Chronic ²	Acute ¹	Chronic ²		
Diethyl Phthalate (µg/l) - 84662					23,000	120,000
Di-2-Ethylhexyl Phthalate (µg/l) - 117817 Known or suspected carcinogen; human health criteria at risk level 10 ⁻⁵ . Synonym = Bis2-Ethylhexyl Phthalate.					18	59
2,4 Dimethylphenol (µg/l) - 105679					540	2,300
Dimethyl Phthalate (µg/l) - 131113					313,000	2,900,000
Di-n-Butyl Phthalate (µg/l) - 84742					2,700	12,000
2,4 Dinitrophenol (µg/l) - 51285					70	14,000
2-Methyl-4,6-Dinitrophenol (µg/l) - 534521					13.4	765
2,4 Dinitrotoluene (µg/l) - 121142 ^(b)					1.1	91
Dioxin 2, 3, 7, 8-tetrachlorodibenzo-p-dioxin (ppq) 1746016 Criteria are based on a risk level of 10 ⁻⁵ and potency of 1.75 x 10 ⁴ mg/kg-day ⁻¹ . To calculate an average effluent permit limit, use mean annual stream flow.					1.2	1.2
1,2-Diphenylhydrazine (µg/l) - 122667 ^(b)					0.40	5.4
Dissolved Oxygen (mg/l) (See 9 VAC 25-260-50 and 9 VAC 25-260-55)						
Alpha-Endosulfan (µg/l) - 959988	0.22	0.056	0.034	0.0087	110	240
Beta-Endosulfan (µg/l) - 33213659	0.22	0.056	0.034	0.0087	110	240
Endosulfan Sulfate (µg/l) - 1031078					110	240
Endrin (µg/l) - 72208	0.086	0.036	0.037	0.0023	0.76	0.81
Endrin Aldehyde (µg/l) - 7421934					0.76	0.81
Ethylbenzene (µg/l) - 100414					3,100	29,000
Fecal Coliform (see 9 VAC 25-260-160 and 9 VAC 25-260-170)						
Fluoranthene (µg/l) - 206440					300	370
Fluorene (µg/l) - 86737					1,300	14,000
Foaming Agents (µg/l) ^(a)					500	
Guthion (µg/l) - 86500		0.01		0.01		
Heptachlor (µg/l) - 76448 ^(b)	0.52	0.0038	0.053	0.0036	0.0021	0.0021
Heptachlor Epoxide (µg/l) - 1024573 ^(b)	0.52	0.0038	0.053	0.0036	0.0010	0.0011
Hexachlorobenzene (µg/l) - 118741 ^(b)					0.0075	0.0077
Hexachlorobutadiene (µg/l) - 87683 ^(b)					4.4	500
Hexachlorocyclohexane Alpha-BHC (µg/l) - 319846 ^(b)					0.039	0.13
Hexachlorocyclohexane Beta-BHC (µg/l) - 319857 ^(b)					0.14	0.46
Hexachlorocyclohexane (µg/l) (Lindane) Gamma-BHC - 58899 ^(b)	0.95		0.16		0.19	0.63
Hexachlorocyclopentadiene (µg/l) - 77474					240	17,000
Hexachloroethane (µg/l) - 67721 ^(b)					19	89
Hydrogen sulfide (µg/l) - 7783064		2.0		2.0		
Indeno (1,2,3,-cd) pyrene (µg/l) - 193395 ^(b)					0.044	0.49
Iron (µg/l) - 7439896 ^(a)					300	
Isophorone (µg/l) - 78591 ^(b)					360	26,000
Kepone (µg/l) - 143500		zero		zero		

PARAMETER - CAS Number	USE DESIGNATION					
	AQUATIC LIFE				HUMAN HEALTH	
	FRESHWATER		SALTWATER		Public Water Supply ³	All Other Surface Waters ⁴
	Acute ¹	Chronic ²	Acute ¹	Chronic ²		
Lead (µg/l) ^{5(d)} - 7439921 Freshwater acute criterion (µg/l) WER [e {1.273[ln(hardness)]-1.084}] Freshwater chronic criterion (µg/l) WER [e {1.273[ln(hardness)]-3.259}]	120 WER=1 CaCO ₃ =100	14 WER=1 CaCO ₃ =100	240 WER=1	9.3 WER=1	15	
Malathion (µg/l) - 121755		0.1		0.1		
Manganese (µg/l) - 7439965 ^(a)					50	
Mercury µg/l ⁵ - 7439976	1.4	0.77	1.8	0.94	0.050	0.051
Methyl Bromide (µg/l) - 74839					48	4,000
Methoxychlor (µg/l) - 72435		0.03		0.03	100	
Mirex (µg/l) - 2385855		zero		zero		
Monochlorobenzene (µg/l) - 108907					680	21,000
Nickel (µg/l) ^{5(d)} - 744002 Freshwater acute criterion µg/l WER[e {0.8460[ln(hardness)] + 1.312}] (CF _a) Freshwater chronic criterion (µg/l) WER[e {0.8460[ln(hardness)] - 0.8840}] (CF _c) (CF _a) = 0.998 (CF _c) = 0.997	180 WER=1 CaCO ₃ =100	20 WER=1 CaCO ₃ =100	74 WER=1	8.2 WER=1	610	4,600
Nitrate as N (µg/l) - 14797558					10,000	
Nitrobenzene (µg/l) - 98953					17	1,900
N-Nitrosodimethylamine (µg/l) - 62759 ^(b)					0.0069	81
N-Nitrosodiphenylamine (µg/l) - 86306 ^(b)					50	160
N-Nitrosodi-n-propylamine (µg/l) - 621647 ^(b)					0.05	14
Parathion (µg/l) - 56382	0.065	0.013				
PCB 1260 (µg/l) - 11096825		0.014		0.030		
PCB 1254 (µg/l) - 11097691		0.014		0.030		
PCB 1248 (µg/l) - 12672296		0.014		0.030		
PCB 1242 (µg/l) - 53469219		0.014		0.030		
PCB 1232 (µg/l) - 11141165		0.014		0.030		
PCB 1221 (µg/l) - 11104282		0.014		0.030		
PCB 1016 (µg/l) - 12674112		0.014		0.030		
PCB Total (µg/l) - 1336363 ^(b)					0.0017	0.0017
Pentachlorophenol (µg/l) - 87865 ^(b) Freshwater acute criterion (µg/l) e ^{(1.005(pH)-4.869)} Freshwater chronic criterion (µg/l) e ^{(1.005(pH)-5.134)}	8.7 pH = 7.0	6.7 pH = 7.0	13	7.9	2.8	82
pH - See § 9VAC25-260-50						
Phenol (µg/l) - 108952					21,000	4,600,000
Phosphorus Elemental (µg/l) - 7723140				0.10		
Pyrene (µg/l) - 129000					960	11,000

PARAMETER - CAS Number	USE DESIGNATION					
	AQUATIC LIFE				HUMAN HEALTH	
	FRESHWATER		SALTWATER		Public Water Supply ³	All Other Surface Waters ⁴
	Acute ¹	Chronic ²	Acute ¹	Chronic ²		
Radionuclides Gross Alpha Particle Activity (pCi/L) Beta Particle & Photon Activity (mrem/yr) (formerly man-made radio nuclides) Strontium 90 (pCi/L) Tritium (pCi/L)					15 4 8 20,000	15 4 8 20,000
Selenium (µg/l)^{5 (d)} - 7782492	20	5.0	300 WER=1	71 WER=1	170	11,000
Silver (µg/l)^{5 (d)} - 7440224 Freshwater acute criterion (µg/l) WER [e^{1.72[ln(hardness)]-6.52}] (CF_a) (CF _a)=0.85	3.4 WER=1; CaCO ₃ =100		2.0 WER=1			
Sulfate (µg/l)^(a)					250,000	
Temperature - See 9 VAC 25-260-50						
1,1,2,2-Tetrachloroethane (µg/l) - 79345^(b)					1.7	110
Tetrachloroethylene (µg/l) - 127184^(b)					8.0	89
Thallium (µg/l) - 7440280					1.7	6.3
Toluene (µg/l) - 108883					6,800	200,000
Total Dissolved Solids (µg/l)^(a)					500,000	
Toxaphene (µg/l) - 8001352^(b) & (c)	0.73	0.0002	0.21	0.0002	0.0073	0.0075
Tributyltin (µg/l) - 60105	0.46	0.063	0.38	0.001		
1, 2, 4 Trichlorobenzene (µg/l) - 120821					260	940
1,1,2-Trichloroethane (µg/l) - 79005^(b)					6.0	420
Trichloroethylene (µg/l) - 79016^(b)					27	810
2, 4, 6 -Trichlorophenol - 88062^(b)					21	65
2-(2, 4, 5 -Trichlorophenoxy propionic acid (Silvex) (µg/l)					50	
Vinyl Chloride (µg/l) - 75014^(b)					0.23	61
Zinc (µg/l)^{5 (d)} Freshwater acute criterion µg/l WER [e^{0.8473[ln(hardness)]+0.884}] (CF_a) Freshwater chronic criterion µg/l WER [e^{0.8473[ln(hardness)]+0.884}] (CF_c) CF _a =0.978 CF _c =0.986	120 WER=1 CaCO ₃ =100	120 WER=1 CaCO ₃ =100	90 WER=1	81 WER=1	9,100	69,000

(a)	Criterion to maintain acceptable taste, odor or aesthetic quality of drinking water and applies at the drinking water intake.
(b)	Known or suspected carcinogen; human health criteria at risk level 10 ⁻⁵
(c)	The chronic aquatic life criteria have been calculated to also protect wildlife from harmful effects through ingestion of contaminated tissue.
(d)	Freshwater values are a function of total hardness as calcium carbonate CaCO ₃ mg/l and the WER. The minimum hardness allowed for use in the equation below shall be 25 and the maximum hardness shall be 400 even when the actual ambient hardness is less than 25 or greater than 400.
1.	One hour average concentration not to be exceeded more than once every 3 years on the average, unless otherwise noted.
2.	Four-day average concentration not to be exceeded more than once every 3 years on the average, unless otherwise noted.

3	Criteria have been calculated to protect human health from toxic effects through drinking water and fish consumption, unless otherwise noted and apply in segments designated as PWS in 9 VAC 25-260-390-540.
4	Criteria have been calculated to protect human health from toxic effects through fish consumption, unless otherwise noted and apply in all other surface waters not designated as PWS in 9 VAC 25-260-390-540.
5	Acute and chronic saltwater and freshwater aquatic life criteria apply to the biologically available form of the metal and apply as a function of the pollutant's water effect ratio (WER) as defined in 9 VAC 25-260-140 F (WER X criterion.) Metals measured as dissolved shall be considered to be biologically available, or, because local receiving water characteristics may otherwise affect the biological availability of the metal, the biologically available equivalent measurement of the metal can be further defined by determining a Water Effect Ratio (WER) and multiplying the numerical value shown in 9 VAC 25-260-140 B by the WER. Refer to 9 VAC 25-260-140 F. Values displayed above in the table are examples and correspond to a (WER) of 1.0. Metals criteria have been adjusted to convert the total recoverable fraction to dissolved fraction using a conversion factor. Criteria that change with hardness have the conversion factor listed in the table above.
6	e flows listed below are default design flows for calculating steady state waste load allocations unless statistically valid methods are employed which demonstrate compliance with the duration and return frequency of the water quality criteria.

Aquatic Life:

Acute criteria	1Q10
Chronic criteria	7Q10
Chronic criteria (ammonia)	30Q10

Human Health:

Non-carcinogens	30Q5
Carcinogens	Harmonic mean (An exception to this is for the carcinogen dioxin. The applicable stream flow for dioxin is the mean annual stream flow.)

The following are defined for this section:

- "1Q10" means the lowest flow averaged over a period of one day which on a statistical basis can be expected to occur once every 10 climatic years.
- "7Q10" means the lowest flow averaged over a period of seven consecutive days that can be statistically expected to occur once every 10 climatic years.
- "30Q5" means the lowest flow averaged over a period of 30 consecutive days that can be statistically expected to occur once every five climatic years.
- "30Q10" means the lowest flow averaged over a period of 30 consecutive days that can be statistically expected to occur once every 10 climatic years.
- "Averaged" means an arithmetic mean.
- "Climatic year" means a year beginning on April 1 and ending on March 31.
- "e" means base e exponential function.
- "ln" means log normal function
- "WER" means the Water Effect Ratio = 1 unless shown otherwise under 9 VAC 25-260-140.F and listed in 9 VAC 25-260-310

PART II**STANDARDS WITH MORE SPECIFIC APPLICATION****9 VAC 25-260-160. Fecal coliform bacteria; shellfish waters.**

In all open ocean or estuarine waters capable of propagating shellfish or in specific areas where public or leased private shellfish beds are present, and including those waters on which condemnation or restriction classifications are established by the State Department of Health, the following criteria for fecal coliform bacteria shall apply:

The geometric mean fecal coliform value for a sampling station shall not exceed an MPN (most probable number) of 14 per 100 milliliters. The 90th percentile shall not exceed an MPN of 43 for a 5-tube, 3-dilution test or 49 for a 3-tube, 3-dilution test.

9 VAC 25-260-170. Bacteria; other waters.

- A. A. In surface waters, except shellfish waters and certain waters identified in subsections B and C of this section, the following criteria shall apply to protect primary contact recreational uses:
 - 1. Fecal coliform bacteria shall not exceed a geometric mean of 200 fecal coliform bacteria per 100 ml of water for two or more samples over a calendar month nor shall more than 10% of the total samples taken during any calendar month exceed 400 fecal coliform bacteria per 100 ml of water. This criterion shall not apply for a sampling station after the bacterial indicators described in subdivision 2 of this subsection have a minimum of 12 data points or after June 30, 2008, whichever comes first.

2. *E. coli* and enterococci bacteria per 100 ml of water shall not exceed the following:

	Geometric Mean ¹	Single Sample Maximum ²
Freshwater ³		
<i>E. coli</i>	126	235
Saltwater and Transition Zone ³		
enterococci	35	104

¹ For two or more samples taken during any calendar month.

² No single sample maximum for enterococci and *E. coli* shall exceed a 75% upper one-sided confidence limit based on a site-specific log standard deviation. If site data are insufficient to establish a site-specific log standard deviation, then 0.4 shall be used as the log standard deviation in freshwater and 0.7 shall be as the log standard deviation in saltwater and transition zone. Values shown are based on a log standard deviation of 0.4 in freshwater and 0.7 in saltwater.

³ See 9 VAC 25-260-140 C for freshwater and transition zone delineation.

- B. Notwithstanding the above, all sewage discharges shall be disinfected to achieve the applicable bacteria concentrations in subsection A 2 of this section prior to discharge.

However, the board, with the advice of the State Department of Health, may determine that reduced or no disinfection of a discharge is appropriate on a seasonal or year-round basis. In making such a determination, the board shall consider the designated uses of these waters and the seasonal nature of those uses. Such determinations will be made during the process of approving, issuing, or reissuing the discharge permit and shall be in conformance with a board approved site-specific use-attainability analysis performed by the permittee. When making a case-by-case determination concerning the appropriate level of disinfection for sewage discharges into these waters, the board shall provide a 45-day public notice period and opportunity for a public hearing.

- C. Surface waters, or portions of these, may be designated in accordance with 9 VAC 25-260-10 to protect secondary contact recreation.

1. Sewage discharges to secondary contact recreational waters shall meet the requirements of the disinfection policy set forth in subsection B of this section.
2. In surface waters, except shellfish waters, designated for secondary contact recreation under this subsection, the following bacteria criteria per 100 ml of water shall apply:

	Geometric Mean ¹	Single Sample Maximum ²
Freshwater ³		
<i>E. coli</i>	630	1173
Saltwater and Transition Zone ³		
enterococci	175	519

¹ Calendar month average for two or more samples.

² No single sample maximum for enterococci and *E. coli* in secondary contact waters shall exceed a 75% upper one-sided confidence limit based on a site-specific log standard deviation. If site data are insufficient to establish a site-specific log standard deviation, then 0.4 shall be the log standard deviation in fresh and transition zone waters and 0.7 shall be the log standard deviation in saltwater. Values shown are based on a log standard deviation of 0.4 in freshwater and 0.7 in saltwater.

³ See subsection 9 VAC 25-260-140 C for fresh water and transition zone delineation.

Oakland Park STP - VA0086789
pH and Temperature data

pH	TEMP
8	28
8	27
7.9	26
7.9	26 90th percentile values
7.9	25
7.8	25
7.8	25
7.8	25
7.8	25
7.8	24
7.8	23
7.7	22
7.7	22
7.7	21
7.7	20
7.6	20
7.6	19
7.6	19
7.6	18
7.6	17
7.6	16
7.6	16
7.5	16
7.5	15
7.5	15
7.4	14
7.4	14
7.2	13
	13
	11
	9

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: **Oakland Park WWT** Permit No.: **NA0068789**
 Receiving Stream: **Little Muddy Creek** Version: **OWP Guidance Memo 00-2011 (8/24/00)**

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO ₃) =	0 mg/L	1Q10 (Annual) =	0 MGD	Annual - 1Q10 Mix =	0 %	Mean Hardness (as CaCO ₃) =	35 mg/L
90% Temperature (Annual) =	0 deg C	7Q10 (Annual) =	0 MGD	7Q10 Mix =	0 %	90% Temp (Annual) =	26 deg C
90% Temperature (Wet season) =	0 deg C	3Q10 (Annual) =	0 MGD	3Q10 Mix =	0 %	90% Temp (Wet season) =	27 deg C
90% Maximum pH =	0 SU	1Q10 (Wet season) =	0 MGD	Wet Season - 1Q10 Mix =	0 %	90% Maximum pH =	7.9 SU
10% Maximum pH =	0 SU	3Q10 (Wet season) =	0 MGD	- 3Q10 Mix =	0 %	10% Maximum pH =	7.9 SU
Tier Designation (1 or 2) =		3Q05 =	0 MGD			Discharge Flow =	0.08 MGD
Public Water Supply (PWS) Y/N? =		Harmonic Mean =	0 MGD				
Trout Present Y/N? =		Annual Average =	0 MGD				
Early Life Stages Present Y/N? =							

Parameter (μg/l unless noted)	Background			Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
	Conc.	Acute	Chronic	HH (PWS)	HH	HH	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)
Acenaphthene	0	-	-	na	2.7E+03	na	-	-	na	2.7E+03	-	-	-	-	na	2.7E+03	-	na
Acrolein	0	-	-	na	7.8E+02	na	-	-	na	7.8E+02	-	-	-	-	na	7.8E+02	-	na
Acrylonitrile ^c	0	-	-	na	6.6E+00	na	-	-	na	6.6E+00	-	-	-	-	na	6.6E+00	-	na
Aldrin ^c	0	3.0E+00	-	na	1.4E+03	na	3.0E+00	-	na	1.4E+03	-	-	-	-	na	3.0E+00	-	na
Aminonitro-N (mg/l)	0	1.01E+01	1.33E+00	na	-	na	1.0E+01	1.3E+00	na	-	-	-	-	-	na	1.0E+01	1.3E+00	na
Aminonitro-N (mg/l) (Yearly)	0	1.01E+01	4.54E+00	na	-	na	1.0E+01	4.5E+00	na	-	-	-	-	-	na	1.0E+01	4.5E+00	na
Anthrascene	0	-	-	na	1.1E+05	na	-	-	na	1.1E+05	-	-	-	-	na	-	-	na
Antimony	0	-	-	na	4.3E+03	na	-	-	na	4.3E+03	-	-	-	-	na	-	-	na
Arsenic	0	3.4E+02	1.5E+02	na	-	na	3.4E+02	1.5E+02	na	-	-	-	-	-	na	3.4E+02	1.5E+02	na
Barium	0	-	-	na	-	na	-	-	na	-	-	-	-	-	na	-	-	na
Benzene ^c	0	-	-	na	7.1E+02	na	-	-	na	7.1E+02	-	-	-	-	na	-	-	na
Benzidine ^c	0	-	-	na	5.4E+03	na	-	-	na	5.4E+03	-	-	-	-	na	-	-	na
Benzo (a) anthracene ^c	0	-	-	na	4.9E-01	na	-	-	na	4.9E-01	-	-	-	-	na	-	-	na
Benzo (b) fluoranthene ^c	0	-	-	na	4.9E-01	na	-	-	na	4.9E-01	-	-	-	-	na	-	-	na
Benzo (k) fluoranthene ^c	0	-	-	na	4.9E-01	na	-	-	na	4.9E-01	-	-	-	-	na	-	-	na
Benzo (a) pyrene ^c	0	-	-	na	4.9E-01	na	-	-	na	4.9E-01	-	-	-	-	na	-	-	na
Bis(2-Chloroethyl) Ether	0	-	-	na	1.4E-01	na	-	-	na	1.4E-01	-	-	-	-	na	-	-	na
Bis(2-Chloroisopropyl) Ether	0	-	-	na	1.7E+05	na	-	-	na	1.7E+05	-	-	-	-	na	-	-	na
Bromofom ^c	0	-	-	na	3.6E+03	na	-	-	na	3.6E+03	-	-	-	-	na	-	-	na
Butylbenzylphthalate	0	-	-	na	5.2E+03	na	-	-	na	5.2E+03	-	-	-	-	na	-	-	na
Cadmium	0	3.7E+00	1.1E+00	na	-	na	3.7E+00	1.1E+00	na	-	-	-	-	-	na	3.7E+00	1.1E+00	na
Carbon Tetrachloride ^c	0	-	-	na	4.4E+01	na	-	-	na	4.4E+01	-	-	-	-	na	-	-	na
Chlordane ^c	0	2.4E+00	4.3E+03	na	2.2E+02	na	2.4E+00	4.3E+03	na	2.2E+02	-	-	-	-	na	2.4E+00	4.3E+03	na
Chloride	0	8.6E+05	2.3E+05	na	-	na	8.6E+05	2.3E+05	na	-	-	-	-	-	na	8.6E+05	2.3E+05	na
TRC	0	1.9E+01	1.1E+01	na	-	na	1.9E+01	1.1E+01	na	-	-	-	-	-	na	1.9E+01	1.1E+01	na
Chlorobenzene	0	-	-	na	2.1E+04	na	-	-	na	2.1E+04	-	-	-	-	na	-	-	na

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Chlorobenzonitrile ^c	0	-	-	na	3.4E+02	-	-	na	3.4E+02	-	-	-	-	-	-	na
Chloroform ^c	0	-	-	na	2.9E+04	-	-	na	2.9E+04	-	-	-	-	-	-	na
2-Chlorophthalate	0	-	-	na	4.3E+03	-	-	na	4.3E+03	-	-	-	-	-	-	na
2-Chlorophenol	0	-	-	na	4.0E+02	-	-	na	4.0E+02	-	-	-	-	-	-	na
Chlorpyrifos	0	8.3E-02	4.1E-02	na	-	8.3E-02	4.1E-02	na	-	-	-	-	-	8.3E-02	4.1E-02	na
Chromium III	0	5.5E+02	7.2E+01	na	-	5.5E+02	7.2E+01	na	-	-	-	-	-	5.5E+02	7.2E+01	na
Chromium VI	0	1.0E+01	1.1E+01	na	-	1.0E+01	1.1E+01	na	-	-	-	-	-	1.0E+01	1.1E+01	na
Chromium, Total	0	-	-	na	-	-	-	na	-	-	-	-	-	-	-	na
Chrysene ^c	0	-	-	na	4.9E-01	-	-	na	4.9E-01	-	-	-	-	-	-	na
Copper	0	1.3E+01	8.6E-00	na	-	1.3E+01	8.6E-00	na	-	-	-	-	-	1.3E+01	8.6E-00	na
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+05	2.2E+01	5.2E+00	na	2.2E+05	-	-	-	-	2.2E+01	5.2E+00	na
DDO ^c	0	-	-	na	8.4E-03	-	-	na	8.4E-03	-	-	-	-	-	-	na
DDT ^c	0	-	-	na	5.9E-03	-	-	na	5.9E-03	-	-	-	-	-	-	na
DDT ^c	0	1.1E+00	1.0E-03	na	5.9E-03	1.1E+00	1.0E-03	na	5.9E-03	-	-	-	-	1.1E+00	1.0E-03	na
Demeton	0	-	1.0E-01	na	-	-	1.0E-01	na	-	-	-	-	-	-	1.0E-01	na
Di(2-ethylhexyl)phthalate ^c	0	-	-	na	4.9E-01	-	-	na	4.9E-01	-	-	-	-	-	-	na
Dibutyl phthalate	0	-	-	na	1.2E+04	-	-	na	1.2E+04	-	-	-	-	-	-	na
Dichloromethane	0	-	-	na	1.6E+04	-	-	na	1.6E+04	-	-	-	-	-	-	na
(Methylene Chloride) ^c	0	-	-	na	1.7E+04	-	-	na	1.7E+04	-	-	-	-	-	-	na
1,2-Dichlorobenzene	0	-	-	na	2.6E+03	-	-	na	2.6E+03	-	-	-	-	-	-	na
1,3-Dichlorobenzene	0	-	-	na	2.6E+03	-	-	na	2.6E+03	-	-	-	-	-	-	na
1,4-Dichlorobenzene	0	-	-	na	2.6E+03	-	-	na	2.6E+03	-	-	-	-	-	-	na
3,3-Dichlorobenzidine ^c	0	-	-	na	7.7E-01	-	-	na	7.7E-01	-	-	-	-	-	-	na
Dichloromonomethane ^c	0	-	-	na	4.6E+02	-	-	na	4.6E+02	-	-	-	-	-	-	na
1,2-Dichloroethane ^c	0	-	-	na	9.9E+02	-	-	na	9.9E+02	-	-	-	-	-	-	na
1,1-Dichloroethylene	0	-	-	na	1.7E+04	-	-	na	1.7E+04	-	-	-	-	-	-	na
1,2-trans-dichloroethylene	0	-	-	na	1.4E+05	-	-	na	1.4E+05	-	-	-	-	-	-	na
2,4-Dichlorophenol	0	-	-	na	7.9E+02	-	-	na	7.9E+02	-	-	-	-	-	-	na
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	-	-	na	3.9E+02	-	-	na	3.9E+02	-	-	-	-	-	-	na
1,2-Dichloropropane ^c	0	-	-	na	1.7E+03	-	-	na	1.7E+03	-	-	-	-	-	-	na
Dieldrin ^c	0	2.4E-01	5.6E-02	na	1.4E-03	2.4E-01	5.6E-02	na	1.4E-03	-	-	-	-	2.4E-01	5.6E-02	na
Diethyl Phthalate	0	-	-	na	1.2E+05	-	-	na	1.2E+05	-	-	-	-	-	-	na
Di-2-Ethylhexyl Phthalate ^c	0	-	-	na	5.9E+01	-	-	na	5.9E+01	-	-	-	-	-	-	na
2,4-Dimethylphenol	0	-	-	na	2.3E+03	-	-	na	2.3E+03	-	-	-	-	-	-	na
Dimethyl Phthalate	0	-	-	na	2.9E+06	-	-	na	2.9E+06	-	-	-	-	-	-	na
Di-n-Butyl Phthalate	0	-	-	na	1.2E+04	-	-	na	1.2E+04	-	-	-	-	-	-	na
2,4-Dinitrophenol	0	-	-	na	1.4E+04	-	-	na	1.4E+04	-	-	-	-	-	-	na
2-Methyl-4,6-Dinitrophenol	0	-	-	na	7.6E+02	-	-	na	7.6E+02	-	-	-	-	-	-	na
2,4-Dinitrofluorene ^c	0	-	-	na	9.1E+01	-	-	na	9.1E+01	-	-	-	-	-	-	na
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppb)	0	-	-	na	1.2E+05	-	-	na	1.2E+05	-	-	-	-	-	-	na
1,2-Diphenylhydrazine ^o	0	-	-	na	5.4E+00	-	-	na	5.4E+00	-	-	-	-	-	-	na
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	-	-	-	-	2.2E-01	5.6E-02	na
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	-	-	-	-	2.2E-01	5.6E-02	na
Endosulfan Sulfate	0	-	-	na	2.4E+02	-	-	na	2.4E+02	-	-	-	-	-	-	na
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	8.6E-02	3.6E-02	na	8.1E-01	-	-	-	-	8.6E-02	3.6E-02	na
Endrin Aldehyde	0	-	-	na	8.1E-01	-	-	na	8.1E-01	-	-	-	-	-	-	na

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Ethylbenzene	0	-	-	na	2.9E-04	-	-	na	2.9E-04	-	-	-	-	-	-	na
Fluorene	0	-	-	na	3.7E-02	-	-	na	3.7E-02	-	-	-	-	-	-	na
Fluorene	0	-	-	na	1.4E-04	-	-	na	1.4E-04	-	-	-	-	-	-	na
Foaming Agents	0	-	-	na	-	-	-	na	-	-	-	-	-	-	-	na
Guthion	0	-	1.0E-02	na	-	-	1.0E-02	na	-	-	-	-	-	-	1.0E-02	na
Heptachlor Epoxide ^c	0	5.2E-01	3.9E-03	na	2.1E-03	5.2E-01	3.9E-03	na	2.1E-03	5.2E-01	3.9E-03	na	2.1E-03	5.2E-01	3.9E-03	na
Heptachlor Epoxide ^c	0	5.2E-01	3.9E-03	na	1.1E-03	5.2E-01	3.9E-03	na	1.1E-03	5.2E-01	3.9E-03	na	1.1E-03	5.2E-01	3.9E-03	na
Hexachlorobenzene ^c	0	-	-	na	7.7E-03	-	-	na	7.7E-03	-	-	-	-	-	-	na
Hexachlorobutadiene ^c	0	-	-	na	5.0E-02	-	-	na	5.0E-02	-	-	-	-	-	-	na
Hexachlorocyclohexane	0	-	-	na	1.3E-01	-	-	na	1.3E-01	-	-	-	-	-	-	na
Alpha-BHC ^c	0	-	-	na	4.6E-01	-	-	na	4.6E-01	-	-	-	-	-	-	na
Beta-BHC ^c	0	-	-	na	6.3E-01	-	-	na	6.3E-01	-	-	-	-	-	-	na
Gamma-BHC ^c (Lindane)	0	9.5E-01	na	na	1.7E-04	9.5E-01	-	na	1.7E-04	9.5E-01	-	na	1.7E-04	9.5E-01	-	na
Hexachlorocyclopentadiene	0	-	-	na	8.9E-01	-	-	na	8.9E-01	-	-	-	-	-	-	na
Hexachlorocyclopentadiene ^c	0	-	2.0E+00	na	-	-	2.0E+00	na	-	-	2.0E+00	na	-	-	2.0E+00	na
Hydrogen Sulfide	0	-	-	na	4.9E-01	-	-	na	4.9E-01	-	-	-	-	-	-	na
Indeno (1,2,3-cd) pyrene ^c	0	-	-	na	2.6E-04	-	-	na	2.6E-04	-	-	-	-	-	-	na
Iron	0	-	-	na	0.0E+00	-	-	na	0.0E+00	-	-	-	-	-	-	na
Isophorone ^c	0	-	0.0E+00	na	-	-	0.0E+00	na	-	-	0.0E+00	na	-	-	0.0E+00	na
Kapone	0	1.1E-02	1.3E-01	na	-	1.1E-02	1.3E-01	na	-	1.1E-02	1.3E-01	na	-	1.1E-02	1.3E-01	na
Lead	0	-	1.0E-01	na	-	-	1.0E-01	na	-	-	1.0E-01	na	-	-	1.0E-01	na
Malathion	0	-	-	na	5.1E-02	-	-	na	5.1E-02	-	-	-	-	-	-	na
Manganese	0	-	-	na	4.0E-03	-	-	na	4.0E-03	-	-	-	-	-	-	na
Mercury	0	1.4E-00	7.7E-01	na	5.1E-02	1.4E-00	7.7E-01	na	5.1E-02	1.4E-00	7.7E-01	na	5.1E-02	1.4E-00	7.7E-01	na
Methyl Bromide	0	-	3.0E-02	na	-	-	3.0E-02	na	-	-	3.0E-02	na	-	-	3.0E-02	na
Methoxychlor	0	-	0.0E+00	na	-	-	0.0E+00	na	-	-	0.0E+00	na	-	-	0.0E+00	na
Mirex	0	-	-	na	2.1E-04	-	-	na	2.1E-04	-	-	-	-	-	-	na
Monochlorobenzene	0	1.8E-02	2.0E-01	na	4.9E-03	1.8E-02	2.0E-01	na	4.9E-03	1.8E-02	2.0E-01	na	4.9E-03	1.8E-02	2.0E-01	na
Nickel	0	-	-	na	1.9E-03	-	-	na	1.9E-03	-	-	-	-	-	-	na
Nitrate (as N)	0	-	-	na	8.1E-01	-	-	na	8.1E-01	-	-	-	-	-	-	na
Nitrobenzene	0	-	-	na	1.8E-02	-	-	na	1.8E-02	-	-	-	-	-	-	na
N-Nitrosodimethylamine ^c	0	-	-	na	1.4E-01	-	-	na	1.4E-01	-	-	-	-	-	-	na
N-Nitrosodiphenylamine ^c	0	-	-	na	1.4E-02	-	-	na	1.4E-02	-	-	-	-	-	-	na
N-Nitrosodipropylamine ^c	0	-	-	na	1.4E-02	-	-	na	1.4E-02	-	-	-	-	-	-	na
Parathion	0	6.5E-02	1.3E-02	na	-	6.5E-02	1.3E-02	na	-	6.5E-02	1.3E-02	na	-	6.5E-02	1.3E-02	na
PCB-1016	0	-	1.4E-02	na	-	-	1.4E-02	na	-	-	1.4E-02	na	-	-	1.4E-02	na
PCB-1221	0	-	1.4E-02	na	-	-	1.4E-02	na	-	-	1.4E-02	na	-	-	1.4E-02	na
PCB-1222	0	-	1.4E-02	na	-	-	1.4E-02	na	-	-	1.4E-02	na	-	-	1.4E-02	na
PCB-1242	0	-	1.4E-02	na	-	-	1.4E-02	na	-	-	1.4E-02	na	-	-	1.4E-02	na
PCB-1248	0	-	1.4E-02	na	-	-	1.4E-02	na	-	-	1.4E-02	na	-	-	1.4E-02	na
PCB-1254	0	-	1.4E-02	na	-	-	1.4E-02	na	-	-	1.4E-02	na	-	-	1.4E-02	na
PCB-1260	0	-	1.4E-02	na	-	-	1.4E-02	na	-	-	1.4E-02	na	-	-	1.4E-02	na
PCB Total ^d	0	-	-	na	1.7E-03	-	-	na	1.7E-03	-	-	-	-	-	-	na

Parameter (ug/l unless noted)	Background Conc	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Meat Limiting Allocations		
		Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)
Pentachlorophenol ^c	0	7.7E-03	5.9E-03	na	7.7E-03	5.9E-03	na	8.2E-01	-	-	-	-	-	7.7E-03	5.9E-03	na
Phenol	0	-	-	na	-	-	na	4.9E+06	-	-	-	-	-	-	-	na
Pyrene	0	-	-	na	-	-	na	1.1E+04	-	-	-	-	-	-	-	na
Radionuclides (Pb/Th except Bismuth)	0	-	-	na	-	-	na	-	-	-	-	-	-	-	-	na
Gross Alpha Activity (mrem/yr)	0	-	-	na	-	-	na	1.5E-01	-	-	-	-	-	-	-	na
Beta and Photon Activity	0	-	-	na	-	-	na	4.0E+00	-	-	-	-	-	-	-	na
Strontium-90	0	-	-	na	-	-	na	8.0E+00	-	-	-	-	-	-	-	na
Triium	0	-	-	na	-	-	na	2.0E+04	-	-	-	-	-	-	-	na
Selenium	0	2.0E+01	5.0E+00	na	2.0E+01	5.0E+00	na	1.1E+04	-	-	-	-	-	2.0E+01	5.0E+00	na
Silver	0	3.2E+00	-	na	-	-	na	-	-	-	-	-	-	3.2E+00	-	na
Sulfate	0	-	-	na	-	-	na	-	-	-	-	-	-	-	-	na
1,1,2,2-Tetrachloroethane ^c	0	-	-	na	-	-	na	1.1E+02	-	-	-	-	-	-	-	na
Tetrachloroethylene ^c	0	-	-	na	-	-	na	8.0E+01	-	-	-	-	-	-	-	na
Thallium	0	-	-	na	-	-	na	6.3E+00	-	-	-	-	-	-	-	na
Toluene	0	-	-	na	-	-	na	2.0E+05	-	-	-	-	-	-	-	na
Total dissolved solids	0	-	-	na	-	-	na	-	-	-	-	-	-	-	-	na
Toxaphene ^c	0	7.3E-01	2.0E-04	na	7.3E-01	2.0E-04	na	7.5E+03	-	-	-	-	-	7.3E-01	2.0E-04	na
Trichloroethylene	0	4.6E-01	6.3E-02	na	4.6E-01	6.3E-02	na	-	-	-	-	-	-	4.6E-01	6.3E-02	na
1,2,4-Trichlorobenzene	0	-	-	na	-	-	na	9.4E+02	-	-	-	-	-	-	-	na
1,1,2-Trichloroethane ^c	0	-	-	na	-	-	na	4.2E+02	-	-	-	-	-	-	-	na
Trichloroethylene ^c	0	-	-	na	-	-	na	8.1E+02	-	-	-	-	-	-	-	na
2,4,6-Trichlorophenol ^a	0	-	-	na	-	-	na	6.5E+01	-	-	-	-	-	-	-	na
2-(2,4,5-Trichlorophenoxy)propionic acid (Silvex)	0	-	-	na	-	-	na	-	-	-	-	-	-	-	-	na
Vinyl Chloride ^c	0	-	-	na	-	-	na	6.1E+01	-	-	-	-	-	-	-	na
Zinc	0	1.1E+02	1.1E+02	na	1.1E+02	1.1E+02	na	6.9E+04	-	-	-	-	-	1.1E+02	1.1E+02	na

Notes:

- All concentrations expressed as microgram/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for industries and design flow for Municipalities
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAAs are based upon a complete mix.
Antidegradation Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
- WLAAs established at the following stream flows: 1010 for Acute, 30010 for Chronic Ammonia, 7010 for Other Chronic, 3005 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Metal	Target Value (SSTV)
Antimony	4.3E+03
Arsenic	9.0E+01
Barium	na
Cadmium	6.8E-01
Chromium III	4.3E+01
Chromium VI	6.4E+00
Copper	5.2E+00
Iron	na
Lead	7.7E+00
Manganese	na
Mercury	5.1E-02
Nickel	1.2E+01
Selenium	3.0E+00
Silver	1.3E+00
Zinc	4.5E+01

Rappahannock Basin: SWCB-Approved Nutrient Waste Load Allocations (9 VAC 25-720-70-C.)					Total Nitrogen		Total Phosphorus	
Facility	VPDES Permit No.	County or City Location	River Basin	Design Flow (MGD)	Total Nitrogen Concentration (mg/l)	Discharged TN Waste Load Alloc. (lbs/yr)	Total Phosphorus Concentration (mg/l)	Discharged TP Waste Load Alloc. (lbs/yr)
Culpeper WWTP (1)	VA0061590	Culpeper	Rappahannock	4.50	4.00	54,820	0.30	4,112
Marshall WWTP	VA0031763	Fauquier	Rappahannock	0.84	4.00	7,797	0.30	585
Mountain Run WWTP (2)	VA0090212	Culpeper	Rappahannock	2.50	4.00	30,456	0.30	2,284
Orange STP	VA0021385	Orange	Rappahannock	3.00	4.00	36,547	0.30	2,741
Rapidan STP	VA0090948	Greene	Rappahannock	0.60	4.00	7,309	0.30	548
FCW&SA-Remington WWTP (3)	VA0076805	Fauquier	Rappahannock	2.50	4.00	30,456	0.30	2,284
Clevers Corner STP (4)	VA0080527	Culpeper	Rappahannock	0.90	4.00	10,964	0.30	822
Warrenton STP	VA0021172	Fauquier	Rappahannock	2.50	4.00	30,456	0.30	2,284
Wilderness Shores WWTP	VA0083411	Orange	Rappahannock	1.25	4.00	15,228	0.30	1,142
Spotsylvania Co.-FMC WWTF	VA0088110	Spotsylvania	Rappahannock	5.40	4.00	65,784	0.30	4,934
Fredricksburg WWTF	VA0025127	Fredricksburg	Rappahannock	3.50	4.00	42,638	0.30	3,198
Haymont WWTF (5)	VA0089125	Caroline	Rappahannock	0.96	4.00	11,695	0.30	877
Haynesville Correctional Ctr. WWTP	VA0023469	Richmond	Rappahannock	0.23	4.00	2,802	0.30	210
Hopyard Farms WWTF	VA0089338	King George	Rappahannock	0.50	4.00	6,091	0.30	457
Stafford Co.-Little Falls Run WWTF	VA0076392	Stafford	Rappahannock	8.00	4.00	97,458	0.30	7,309
Spotsylvania Co.-Massaponax WWTF	VA0025658	Spotsylvania	Rappahannock	8.00	4.00	97,458	0.30	7,309
Montross-Westmoreland WWTP	VA0072729	Westmoreland	Rappahannock	0.13	4.00	1,584	0.30	119
Oakland Park STP	VA0086789	King George	Rappahannock	0.14	4.00	1,706	0.30	128
Tappahannock WWTP	VA0071471	Essex	Rappahannock	0.80	4.00	9,746	0.30	731
Urbanna WWTP	VA0026263	Middlesex	Rappahannock	0.10	4.00	1,218	0.30	91
US Army -Ft. A.P. Hill WWTP	VA0032034	Caroline	Rappahannock	0.53	4.00	6,457	0.30	484
Warsaw STP	VA0026891	Richmond	Rappahannock	0.30	4.00	3,655	0.30	274
Omega Protein (6)	VA0003867	Northumberland	Rappahannock	3.21	4.00	21,213	0.30	1,591
Reedville S.D. WWTP	VA0060712	Northumberland	Rappahannock	0.20	4.00	2,436	0.30	183
Kilmarnock WWTP	VA0020788	Lancaster	Rappahannock	0.50	4.00	6,091	0.30	457
25				Rappahannock Totals =	50.89	602,062		45,155

Notes:

- (1) Town of Culpeper WWTP: waste load allocations (WLAs) based on a design flow capacity of 4.5 million gallons per day (MGD). If plant is not certified to operate at 4.5 MGD design flow capacity by 12/31/10, the WLAs will decrease to TN = 36,547 lbs/yr; TP = 2,741 lbs/yr, based on a design flow capacity of 3.0 MGD.
- (2) Mountain Run WWTP: waste load allocations (WLAs) based on a design flow capacity of 2.5 million gallons per day (MGD). If plant is not certified to operate at 2.5 MGD design flow capacity by 12/31/10, the WLAs will decrease to TN = 18,273 lbs/yr; TP = 1,371 lbs/yr, based on a design flow capacity of 1.5 MGD.
- (3) Fauquier Co. W&SA-Remington WWTP: waste load allocations (WLAs) based on a design flow capacity of 2.5 million gallons per day (MGD). If plant is not certified to operate at 2.5 MGD design flow capacity by 12/31/10, the WLAs will decrease to TN = 24,364 lbs/yr; TP = 1,827 lbs/yr, based on a design flow capacity of 2.0 MGD.
- (4) Clevers Corner STP: waste load allocations (WLAs) based on a design flow capacity of 0.9 million gallons per day (MGD). If plant is not certified to operate at 0.9 MGD design flow capacity by 12/31/10, the WLAs will decrease to TN = 7,309 lbs/yr; TP = 548 lbs/yr, based on a design flow capacity of 0.6 MGD.
- (5) Haymont WWTF: waste load allocations (WLAs) based on a design flow capacity of 0.96 million gallons per day (MGD). If plant is not certified to operate at 0.96 MGD design flow capacity by 12/31/10, the WLAs will decrease to TN = 7,068 lbs/yr; TP = 530 lbs/yr, based on a design flow capacity of 0.58 MGD.
- (6) Omega Protein: waste load allocations (WLAs) based on a theoretical maximum of 198 days per year of processing operations and discharge.

Hydrogen Sulfide Monitoring
Data
Oakland Park STP -
VA0086789
King George County

Mar-03	0.064
Jun-03	0.06
Aug-03	0.06
Oct-03	0.066
Dec-03	0.013
Feb-04	0.006
Apr-04	0.009
Jun-04	0.01
Aug-04	0.007
Oct-04	0.007
Dec-04	0.2
Feb-05	1
Jun-05	1

3/27/2006 7:54:00 AM

Facility = Oakland Park STP
Chemical = Hydrogen Sulfide
Chronic averaging period = 4
WLAa =
WLAc = 2
Q.L. = 0.16
samples/mo. = 1
samples/wk. = 1

Summary of Statistics:

observations = 13
Expected Value = .126123
Variance = .005726
C.V. = 0.6
97th percentile daily values = .306911
97th percentile 4 day average = .209843
97th percentile 30 day average = .152111
< Q.L. = 10
Model used = BPJ Assumptions, Type 1 data

No Limit is required for this material

The data are:

0.064
0.06
0.06
0.066
0.013
0.006
0.009
0.01
0.007
0.007
0.2
1
1

PUBLIC NOTICE OF INTENT TO MODIFY A VPDES PERMIT

Citizens may comment on the proposed modification of a permit that allows the release of treated wastewater into a water body in King George County, Virginia

DATE OF PUBLICATION: MAY 3RD AND MAY 10TH, 2006

PERMIT NAME: King George County Service Authority, Oakland Park WWTP, Virginia Pollutant Discharge Elimination System Permit No. (VPDES) – VA0086789

The owners or operators of municipal facilities that discharge or propose to discharge wastewater into the streams, rivers or bays of Virginia from a point source must apply for this permit. In general, point sources are fixed sources of pollution such as pipes, ditches or channels. The applicant must submit the application to the Department of Environmental Quality, under the authority of the State Water Control Board.

PURPOSE OF NOTICE: To invite the public to comment on the draft permit.

NAME, ADDRESS AND PERMIT NUMBER OF APPLICANT: King George County Service Authority
10459 Courthouse Drive
King George, VA 222485
VA0086789

NAME AND ADDRESS OF FACILITY: Oakland Park WWTP
1015 French Court
Oakland Park Subdivision
King George, VA 22485

PROJECT DESCRIPTION: The King George County Service Authority has applied for reissuance of a permit for the Oakland Park WWTP in King George County, Virginia. The applicant proposes to release treated sewage at a rate of 0.14 Million Gallons per Day into an unnamed tributary of Muddy Creek in King George County that is in the Rappahannock River watershed. A watershed is the land area drained by a river and its incoming streams. The sludge will be treated and landfilled. The permit will limit or monitor the following pollutants to amounts that protect water quality: Flow, pH, CBOD, Total Suspended Solids, Total Phosphorus, Dissolved Oxygen, Total Nitrogen, TKN, Total Residual Chlorine and Total Recoverable Copper.

HOW A DECISION IS MADE: After public comments have been considered and addressed by the permit or other means, DEQ will make the final decision unless there is a public hearing. DEQ may hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the proposed permit. If there is a public hearing, the State Water Control Board will make the final decision.

HOW TO COMMENT: DEQ accepts comments by e-mail, fax or postal mail. All comments must be in writing and be received by DEQ during the 30 day comment period. The public also may request a public hearing.

WRITTEN COMMENTS MUST INCLUDE:

1. The names, mailing addresses and telephone numbers of the person commenting and of all people represented by the citizen.
2. If a public hearing is requested, the reason for holding a hearing, including associated concerns.
3. A brief, informal statement regarding the extent of the interest of the person commenting, including how the operation of the facility or activity affects the citizen.

TO REVIEW THE DRAFT PERMIT AND APPLICATION: The public may review the documents at the DEQ-Northern Virginia Regional Office every work day by appointment.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION:

Name: James A. Olson

Address: DEQ-Northern Virginia Regional Office, 13901 Crown Court, Woodbridge, VA 22193

Phone: (703) 583-3836 E-mail: jaolson@deq.virginia.gov Fax: (703) 583-3841

**Oakland Park WWTP – VA0086789
ATTACHMENT 12**

Revised 2/2003

**State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review**

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name: Oakland Park WWTP
 NPDES Permit Number: VA0086789
 Permit Writer Name: James A. Olson
 Date: 02/10/06

Major ☐ Minor ☒ Industrial ☐ Municipal ☒

I.A. Draft Permit Package Submittal Includes:

	Yes	No	N/A
1. Permit Application? Flow Modification Request Letter	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?			X
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?		X	
8. Whole Effluent Toxicity Test summary and analysis?			X
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics

	Yes	No	N/A
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet or permit contain a description of the wastewater treatment process?	X		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed?		X	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?			
7. Does the fact sheet or permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?	X		
a. Has a TMDL been developed and approved by EPA for the impaired water?			X
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?	X		
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?	X		
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?		X	

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?	X		
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?	X		
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?	X		
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?			X
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs (To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration

	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements

	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether “antibacksliding” provisions were met for any limits that are less stringent than those in the previous NPDES permit?	X		

II.C. Technology-Based Effluent Limits (POTWs)

	Yes	No	N/A
1. Does the permit contain numeric limits for <u>ALL</u> of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits

	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?		X	
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a “reasonable potential” evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the “reasonable potential” evaluation was performed in accordance with the State’s approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have “reasonable potential”?	X		
d. Does the fact sheet indicate that the “reasonable potential” and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?	X		
e. Does the permit contain numeric effluent limits for all pollutants for which “reasonable potential” was determined?	X		

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the record indicate that an “antidegradation” review was performed in accordance with the State’s approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?	X		
4. Does the permit require testing for Whole Effluent Toxicity?	X		

II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?	X		
2. Does the permit include appropriate storm water program requirements?	X		

II.F. Special Conditions – cont.	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		X	
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?		X	
a. Does the permit require implementation of the “Nine Minimum Controls”?			X
b. Does the permit require development and implementation of a “Long Term Control Plan”?			X
c. Does the permit require monitoring and reporting for CSO events?			X
7. Does the permit include appropriate Pretreatment Program requirements?	X		

II.G. Standard Conditions		Yes	No	N/A
1. Does the permit contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?		X		
List of Standard Conditions – 40 CFR 122.41				
Duty to comply	Property rights	Reporting Requirements		
Duty to reapply	Duty to provide information	Planned change		
Need to halt or reduce activity	Inspections and entry	Anticipated noncompliance		
not a defense	Monitoring and records	Transfers		
Duty to mitigate	Signatory requirement	Monitoring reports		
Proper O & M	Bypass	Compliance schedules		
Permit actions	Upset	24-Hour reporting		
		Other non-compliance		
2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?		X		

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	<u>James A. Olson</u>
Title	<u>Environmental Specialist Sr.</u>
Signature	<u>James A. Olson</u>
Date	<u>February 10, 2006</u>